Civil Aviation Authority

Estimating the cost of capital: technical appendix for the economic regulation of Heathrow and Gatwick from April 2014: Notices granting the licences

CAP 1155

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Table of Contents

CHAPTER 1

Summary

1.1 The CAA has decided to use a pre-tax real[1] weighted average cost of capital (WACC) of 5.35% for Heathrow Airport Limited (HAL) and 5.7% for Gatwick Airport Limited (GAL) for Q6.

1.2 The CAA's decision is the same as that included in its technical annex to the notices of the proposed licences published in January 2014 ('proposed licence'). This is lower than the CAA's October 2013 final proposals of 5.60% and 5.95% respectively because of a lower cost of equity resulting from a lower total market return (TMR) assumption. In reaching its view in the proposed licence in January 2014 the CAA considered stakeholder responses and evidence including the Competition Commission's (CC) provisional determination on Northern Ireland Electricity (NIE). In coming to the decision the CAA has considered the responses to the proposed licence.

1.3 The WACCs for both airport operators have reduced compared to the Q5 settlement[2] of 6.2% for HAL and 6.5% for GAL. The reductions mainly reflect reductions in corporate tax, the cost of debt and TMR since the previous settlement (2008/9 to 2013/14).

Approach

1.4 The CAA's approach to the WACC continues to assume notionally financed airport operators. The financing structure should remain the responsibility of the regulated company. The regulated companies and their shareholders should bear the risk of highly leveraged structures (or gearing above the notional gearing assumptions).

1.5 The CAA assumes gearing (debt to regulatory asset base (RAB)) of 60% for HAL (Q5: 60%) and 55% for GAL (Q5: 60%).

[1] All figures in this document are expressed in pre-tax real (i.e. inflation adjusted) terms unless otherwise stated.

[2] The Q5 headline WACC was 6.2% (HAL) and 6.5% (GAL), but the figures applied to the RAB to derive the actual capital charge were reduced to 6.01% and 6.3% respectively owing to the airport operators' ability to reinvest returns within the year. A similar automatic adjustment has not been made for Q6; instead the concept has been taken into account as one of the factors when deciding the point estimates within the range.

1.6 Throughout the review, the CAA's approach was a combination of a careful assessment of the individual components of the WACC and a top-down assessment of the WACC. Evidence was considered as a whole by the CAA to reach its proposals for the point estimates for the WACC.

1.7 The CAA received a report by Professor Puliyur (Sudi) Sudarsanam[3] called 'An expert's report on errors made by the Civil Aviation Authority in its conclusions on the cost of capital in the formulation of a price control for Heathrow Airport Limited for the sixth quinquennium (Q6) between 1 April 2014 and 31 December 2018'.[4] The report was submitted by British Airways plc (BA) and Virgin Atlantic Airways Ltd (Virgin) both of whom endorsed its content and conclusions. The CAA sets out and takes account of this submission in the chapters which follow.

Cost of equity

1.8 The cost of equity is estimated using the Capital Asset Pricing Model (CAPM). The post-tax cost of equity estimates for HAL and GAL is the same as the proposed licence in January 2014 and is lower than the final proposals in October 2013 reflecting the lower TMR assumption. The beta assumptions are unchanged. The CAA has decided that the post-tax cost of equity is 6.8% for HAL and 7.0% for GAL. The lower TMR assumption compared to the final proposals in October 2013 reflects the evidence presented by the CC and the greater emphasis placed by the CC on forward-looking estimates (which tend to be lower than the long-run historical estimates).

1.9 The CAA continues to consider that it is not appropriate to include a specific uplift for skewed equity returns, something for which HAL had argued.[5]

Cost of debt

1.10 The CAA's cost of debt assumption, 3.2% for both HAL and GAL, is

[3] Of Cranfield Business School, and previously a Member of the Competition Commission including the Group who conducted the inquiries into BAA Ltd for the purpose of the Competition Commission's recommendations to the CAA for the Q5 determinations for Heathrow, Gatwick and Stansted airports.

[4] Published at http://www.caa.co.uk/default.aspx?catid=78&pagtype=90&pageid=67

[5] HAL considered that similar to other investments it suffers in recessions but, relative to other investments, it cannot benefit when the economy is doing well owing to capacity constraints.

unchanged from the proposed licence (January 2014) and final proposals (October 2013). Several stakeholders considered that the CAA had made errors in its calculation. The CAA has assessed representations received to the proposed licence and responses to previous consultations and notes that although there are some reasons to suggest that the assumption might be lower or higher than 3.2%, on balance the evidence available suggests an estimate of 3.2% is appropriate.

CHAPTER 2

Introduction

2.1 This document sets out the CAA's reasoning for its assessments of the WACCs to apply to the Q6 price settlements for HAL and GAL. Unless otherwise stated this document refers to the pre-tax real WACC.

2.2 This document should be read in conjunction with Licence grant under Section 15 of the Civil Aviation Act 2012, Heathrow Airport Limited (CAP 1151) and Licence grant under Section 15 of the Civil Aviation Act 2012, Gatwick Airport Limited (CAP 1152), both published at the same time and available from the CAA's website.[6]

2.3 The remainder of this document is structured as follows.

- Chapter 3 considers **methodological issues** including whether adjustments need to be made for **skewed equity returns** and whether it is appropriate to introduce **debt indexation**.
- Chapter 4 sets out the **overarching comments** received.
- Chapter 5 assesses **gearing** and the appropriate value for the **cost of debt**.
- Chapter 6 assesses **risk** and the appropriate value for the **cost of equity**.
- Chapter 7 draws together the preceding chapters and assesses the appropriate **WACC** value.

6 http://www.caa.co.uk/default.aspx?catid=78&pagtype=90&pageid=67

CHAPTER 3

Methodological issues

3.1 This chapter considers the basic framework, skewed equity returns and debt indexation.

Basic framework

WACC and CAPM

3.2 The proposed licence concluded that, consistent with previous reviews and other regulated sectors, the WACC was the appropriate basis for estimating the cost of capital and that the two elements were the cost of equity (using the CAPM framework) and the cost of debt.

3.3 As the CAA has not received additional representations on this issue, the CAA's decision is, for the reasons set out in the proposed licence and previous consultations, that the WACC continues to be the most appropriate way to assess the cost of capital and the CAPM framework is the most appropriate way to assess the cost of equity.

Accounting rate of return

3.4 The accounting rate of return (ARR) is a concept that recognises that within a year returns can be reinvested, and therefore to earn the WACC by the end of the year, a lower cost of capital, the ARR, should be applied to the RAB. The ARR was used in previous quinquennia and is used in other, but not all, regulated sectors.

3.5 In the proposed licence, the CAA stated that since the WACC was ultimately a judgement within a plausible range of outcomes, formulaically applying the ARR might result in spurious accuracy. However, the CAA continued to consider that there was an argument for the consideration of the effect of the ARR because returns that are earned throughout the year can be reinvested. The CAA considered that it was, therefore, something the CAA should take into account when judging where in the range to adopt its proposals for the WACC.

3.6 As the CAA has not received additional representations on this issue, the CAA's decision is, for the reasons set out in the proposed licence and repeated above, that rather than apply mechanically, the ARR is something the CAA will take into account when judging where in the range to adopt its point estimate for the WACC.

Skewed equity returns

3.7 Negatively skewed equity returns would mean that compared to other investments, an airport operator has more downside risk than upside potential. For example, the airport operator could suffer in recessions, but may not be able to benefit when the economy is doing well.[7] If skewness exists and is material, investors with well diversified portfolios are concerned about the coskewness of the investment relative to the market generally.

Proposed licence

3.8 Building on previous consultations, in the proposed licence the CAA noted that beta and coskewness were likely to be driven by the same factor (excess demand over fixed capacity), and that as a consequence, if capacity tightens one would expect the beta to fall and negative coskewness to increase, other things being equal.

3.9 The proposed licence stated that in response to the final proposals HAL considered that for the period very shortly before de-listing an asset beta of 0.43 (the CAA used 0.50 in its proposed licence) was consistent with negative coskewness. In the final proposals the CAA noted this, but also considered that over a longer period, negative coskewness was not consistent with the beta estimate above 0.45. In the proposed licence the CAA stated that PricewaterhouseCooper (PwC) presented 14 years' worth of monthly data, and HAL's arguments focused on a small number of data points. Furthermore, in the proposed licence the CAA noted that using HAL's suggestion of an asset beta of 0.43, a negative coskewness coefficient of -0.46, and a

[7] The CAPM assumes that share returns have a normal distribution. This distribution is symmetric, with equal chances of the same upside gain and downside loss. Because of this symmetry, risk can be fully described by the standard deviation (or equivalently by the variance). Professor Ian Cooper, on behalf of HAL, argued that when returns are not normally distributed, the CAPM is an incomplete model. Skewness means that the upside potential of a company's shares is different to their downside risk. Positive skewness means that upside potential is greater than downside risk, and negative skewness means that downside risk is greater than upside potential. In particular, Cooper argued when there is significant skewness of returns the standard deviation (and consequently the CAPM beta) is no longer an adequate description of risk. Furthermore, Cooper argued that skewness matters because it affects the desirability of an investment to investors and, hence, the cost of equity. Published at: http://www.caa.co.uk/default.aspx?catid=78&pagtype=90&pageid=67

coskewness premium of -1.9% the cost of equity was broadly the same as using an asset beta of 0.5 as shown in Figure 3.1.

Figure 3.1 Post-tax cost of equity using HAL's coskewness assumptions

Component	CAA's final view	HAL's suggested asset beta, coskewness coefficient and coskewness premium
Risk-free rate	0.5%	0.5%
Asset beta	0.50	0.43
Equity beta	1.10	0.93
Equity risk premium*	5.75%	5.75%
Coskewness coefficient	-	-0.46
Coskewness premium	-	-1.9%
Post-tax cost of equity	6.83%	6.69%

* the equity risk premium (ERP) is likely to be lower where a coskewness premium is also used. For simplicity the table uses the same ERP in both calculations.
Source: CAA calculations and page 31 of HAL's response to the final proposals

Decision

3.10 As the CAA has not received additional representations on this issue, the CAA's decision is, for the reasons set out in the proposed licence and previous consultations and summarised above, that it is not appropriate to include an allowance for coskewness in the cost of equity for Q6.

Indexation of the cost of debt

3.11 The CAA's cost of capital calculation includes a cost of debt assumption. In Q5 and previous quinquennia, the cost of capital and its components were fixed, ex-ante, for the quinquennium. An alternative approach (called indexation) is for the cost of debt and therefore the cost of capital to be updated in line with market movements during the control period.[8]

[8] The cost of equity is often considered to be a long-run estimate and relatively unmoved by markets in the shorter run (i.e. during the control period). In contrast the cost of debt is considered to be more dependent on short-run market conditions which can change during the quinquennium.

Proposed licence

3.12 The CAA proposed that, on the balance of evidence set out in the Chapter 4 of final proposals (October 2013), it would not be in passengers' interests to introduce debt indexation for the airport operators for Q6.

Decision

3.13 As the CAA has not received additional representations on this issue, the CAA's decision is, for the reasons set out in the proposed licence and previous consultations, that it is not appropriate to index the cost of debt for Q6.

CHAPTER 4

Estimating the WACC: summary

Representations received

4.1 As noted in paragraph 1.7 the CAA received a report by Professor Sudarsanam submitted by BA and Virgin both of whom endorsed its content and conclusions. The CAA considers this report in the chapters which follow.

4.2 In addition to the Sudarsanam paper, the CAA received representations on the proposed licence which referred to the WACC from HAL and the Heathrow Airline Community (London (Heathrow) Airline Consultative Committee (LACC) and Heathrow AOC Limited).

4.3 HAL stated that while its response did not comment in detail on policy issues or the building blocks (WACC, passenger forecasts etc) this should not be interpreted in any way as HAL agreeing with the CAA's assumptions, analysis or decision. HAL considered that the CAA's proposed WACC of 5.35% was flawed and did not accurately represent Heathrow's risk profile.

4.4 The Heathrow Airline Community welcomed the CAA's consideration of the CC's NIE investigation and its subsequent downward revision of the TMR. However, the Airline Community still believed, as it had highlighted in previous submissions, that the CAA had made a number of errors in its calculation of the WACC which resulted in the CAA setting a WACC that is higher than it should be.

CHAPTER 5

Estimating the WACC: gearing and the cost of debt

Gearing

Proposed licence

5.1 In the proposed licence the CAA proposed that the appropriate gearing should be 60% and 55% for HAL and GAL respectively. For HAL the gearing assumption was unchanged from Q5. For GAL the gearing in the proposed licence was 5% lower than Q5.

5.2 In the proposed licence the CAA considered that ultimately, the choice of gearing was a matter of judgement. The CAA placed some weight on the status quo to avoid unnecessary uncertainty. However, GAL's relative risk exposure is higher compared to HAL, specifically with respect to exposure to demand risk, implying a relatively smaller capacity for debt financing. The CAA considered that the difference in risk between HAL and GAL warranted a lower gearing assumption for GAL.

5.3 In the proposed licence the CAA noted that the Airports Consultative Committee (ACC) did not consider there was a rational basis for reducing the gearing assumption to 55% (from 60% in Q5) for a notionally efficient company of GAL's size, while also increasing the beta. In the proposed licence the CAA stated that it continued to consider, for the reasons set out in PwC's work and the initial and final proposals, that GAL's risk profile is such that the appropriate gearing assumption for GAL should be slightly lower than HAL. The cost of GAL's actual debt is lower than that of HAL and, as noted in the final proposals, this is explained by the differences in timing of the issuances.

5.4 The CAA noted that it considered the level of gearing in the notional capital structure was an important assumption and input into the assessment of financeability and ultimately whether the price cap met the CAA's requirements to have regard to:

- the need to secure that each holder of a licence is able to finance its provision of airport operation services; and
- the need to promote economy and efficiency on the part of each holder of a licence.

5.5 The CAA stated that if notional gearing was too low, then the notional financial structure may not be economic or efficient. The CAA noted that it is generally considered that the post-tax WACC increases as gearing falls because of a reduced tax shield on debt.

5.6 The CAA also noted that if the notional gearing assumption was too high then the notional airport operator might find it difficult to finance its operations. The CAA stated that its financeability testing in the main documents[9] supported the view that the notional airport operator would be able to finance its operations at the assumed gearing of 60% and 55% for HAL and GAL respectively. Furthermore, the ratios suggested that there was scope to absorb downside shocks and maintain an investment grade rating, but that the level of the buffer was not so large as to suggest significant inefficiency in the assumed gearing levels.

5.7 The CAA noted that the CC's NIE provisional determination assumed a gearing level of 50% and this suggested that the CAA's assumptions were broadly correct.

Decision

5.8 As the CAA has not received additional representations on this issue, the CAA’s decision is, for the reasons set out in the proposed licence and repeated above, that it is appropriate to use gearing of 60% and 55% for HAL and GAL respectively.

Cost of debt

5.9 This section considers the cost of debt issue by issue. Within each issue the CAA sets out the proposed licence, the representations received (if appropriate) the CAA’s assessment of the representations (if appropriate) and the CAA’s decision.

9 'Economic regulation at Heathrow from April 2014: notice of the proposed licence' and 'Economic regulation at Gatwick from April 2014: notice of the proposed licence'.

Proposed licence

5.10 The cost of debt in the proposed licence was 3.2% for HAL and GAL. This was lower than the Q5 determination (3.55% for both airport operators).

Figure 5.1: Cost of debt range including fees in the proposed licence

	HAL	GAL
Historical fixed rate debt (70%)	3.30%	3.10%
New debt and floating rate debt (30%)	2.50%	2.75%
Cost of debt excluding fees	3.05%	3.00%
Fees	0.15%	0.20%
Cost of debt including fees	**3.20%**	**3.20%**

Source: proposed licence

Representations received

5.11 The CAA received representations from Sudarsanam on behalf of BA and Virgin. Professor Sudarsanam made points on the calculation of the cost of existing debt and points on the calculation of the cost of new debt. These are taken in turn.

Review of Q5

Proposed licence

5.12 In response to the final proposals, BA was critical of the CAA's use of Bank of America Merrill Lynch (BoAML) bond indices. The CAA considered that the purpose of the comparison of the Q5 cost of debt assumption to actual yields during Q5 (using BoAML indices) was to provide background to the Q6 review and to assess the claim that airport operators had been under rewarded during Q5.

Representations received

5.13 Sudarsanam considered that the BoAML indices were not appropriate for either the review of Q5 or the estimation of the cost of debt for Q6. This is assessed in paragraph 5.55 below.

Approach to the assessment of the cost of debt

Proposed licence

5.14 The CAA had previously stated (in the initial and final proposals) that it sets the cost of capital for a notional financed airport operator and does not take into account the actual ownership or actual finance structure. In response to the final proposals BA considered that, by taking into account yields on HAL and GAL's actual bonds the CAA has departed from that policy.

5.15 The CAA continued to consider that the cost of capital should reflect that of a notionally financed airport operator.[10] The CAA also tries to ground its analysis in market data and in particular data which provided evidence as to how investors view the risks and therefore the required returns for investing in HAL and GAL. The CAA stated that at the time of the Q5 decision, there were only a few BAA traded bonds.

5.16 The CAA noted that it was aware that, by taking into account evidence on HAL and GAL's actual bonds, the CAA might appear to have discarded the notional debt approach, therefore giving stakeholders (including investors) the expectation that the cost of actual debt was a 'pass through' for Q6 and future control periods. This is not the case. The CAA used evidence on the cost of HAL and GAL's bonds because it considered that the yields on these bonds were not out-of-line with benchmark indices for the same ratings at the time of issuance and therefore could be considered efficiently incurred. If there had been no such alignment, the CAA would not have used the evidence. Accordingly the CAA considered that it was not departing from the notionally financed company nor was the actual cost of debt a pass through.

5.17 The CAA also stated that it used a range of evidence to inform its estimate of the cost of debt including benchmark bond indices and did not solely use yields on HAL and GAL bonds.

Overall cost of debt

Proposed licence

5.18 As set out in the proposed licence, HAL raised numerous points all of

[10] Placing to one side the use of HAL and GAL's actual bonds as a source of evidence, the CAA's final proposals' cost of debt estimate used the following notional assumptions: gearing; proportion of new debt required in Q6 (based on RAB assumptions in the price control); cost of new debt and floating rate debt; proportion of debt which is index-linked (for the purposes of financeability testing); fees; credit rating; structure (e.g. senior and junior); and credit enhancements (such as security over assets).

which it considered showed that the CAA's final proposals understated the cost of debt. Oxera (on behalf of GAL) considered that although the final proposals' cost of debt allowance for GAL was the same Oxera had proposed, the CAA should allow GAL a higher cost of debt than it allowed HAL. BA and Cambridge Economic Policy Associates (CEPA), on behalf of BA, raised points all of which they considered showed that the CAA's final proposals overstated the cost of debt.

5.19 The CAA used the CC's approach to NIE's cost of debt to double check the cost of debt in the proposed licence and see if any material differences exist. The CAA substituted its estimate of nominal historical cost of debt for HAL and GAL into the CC's model, but left all other assumptions made by the CC unchanged. The CAA calculated that using the CC's methodology and assumptions the cost of debt:

- for HAL would have been 3.26% (that is 6 basis points (bps) higher than the CAA's final proposals); and
- for GAL would have been 3.11% (that is 9bps lower than the CAA's final proposals).

Figure 5.2 Comparison of CC's NIE provisional determination and the CAA's final proposals

	CC NIE	HAL	GAL
Historical fixed rate debt (80%)	3.60%	*3.40%	*3.21%
New debt and floating rate debt (20%)	2.40%	2.40%	2.40%
Fees (added to new debt only)	0.30%	0.30%	0.30%
Cost of debt including fees	**3.40%**	**3.26%**	**3.11%**
Difference to CAA final proposals (3.2%)	*0.20%*	*0.06%*	*-0.09%*

* The CAA has used its estimate of the nominal cost of historical fixed rate debt of 6.3% (HAL) and 6.1% (GAL) and deducted inflation in the same manner as the CC. In the CAA's final proposals these figures, after deducting inflation, were 3.3% and 3.1%.
Source: CAA analysis

5.20 The CAA considered that the CC's provisional determination did not suggest the CAA should revise its final proposals for the cost of debt.

Representations received

5.21 Sudarsanam considered that the CAA’s comparison of its cost of debt estimate to the CC’s estimate for NIE was ‘an illogical and meaningless exercise'.[11] Sudarsanam considered the comparison had many flaws because: the approached taken by the CC and the CAA differed, the mix of existing and new debt differed, the rating and cost of NIE's existing debt differed to HAL, the CC and CAA took difference approaches to fees and HAL would not qualify for a small company premium on its debt.

CAA response

5.22 The CAA does not consider that a comparison of the CAA's work to that of another regulatory authority, and indeed the appeal body for conditions of new licences and licence modifications under the Civil Aviation Act 2012, is an illogical and meaningless exercise. The CAA undertook the comparison to understand whether or not it highlighted the need for further exploration or explanation of the differences between the CAA's work and that of the CC. There may be other ways in which to undertake the comparison, but given the CAA's approach did not suggest further work was warranted it did not seek further detailed work.

Decision

5.23 In the proposed licence the CAA concluded that the CC's provisional determination did not suggest that the CAA should revise its final proposals for the cost of debt. Similarly, Sudarsanam's paper does not suggest that to the CAA that it should change this conclusion.

Inflation

Proposed licence

5.24 The CAA stated that based on work by CEPA and RARE Infrastructure, airlines considered that the CAA had been inconsistent with its inflation assumptions in the final proposals, had applied them incorrectly and had understated the inflation rate.

5.25 Inflation assumptions in the cost of debt calculation are required because corporate debt yields are expressed in nominal terms (i.e. including an allowance for inflation) and the CAA (and most other regulators) sets a real cost of capital (i.e. excluding an allowance for inflation). The CAA noted that when adjusting market data for inflation, two issues need to be considered:

[11] Sudarsanam (2014), 5.5.8.

- whether the adjustment is for expected inflation or actual inflation; and
- how the inflation assumption is estimated.

5.26 In the proposed licence the CAA noted that the price an investor is willing to pay for a bond (and therefore the yield that they require) reflects the investor's expectations of the future, including its expectations of future inflation (until the expected redemption date) at the time it purchased the bond.[12]

5.27 The CAA also stated that estimating investors' expectations of inflation was not straight-forward and a number of possible sources of evidence exist.

- Recent actual inflation (on the assumption that the recent past is a good guide to the future). RPI inflation for the year to November 2013 was 2.6%.[13]
- Forecasts by independent forecasters and government. Forecasts vary by forecaster and by year, and were in the range of 2.8% to 3.5% for the period up to 2018.
- Breakeven inflation (the implied inflation rate calculated by comparing government index-linked bonds with government conventional bonds). For example at 30 November 2013 the implied inflation spot curve suggested inflation was 2.7% (derived from gilts with 2.5 years to maturity) to 3.7% (from gilts with 25 years' maturity).[14]

5.28 In the proposed licence the CAA considered that ideally the choice of inflation assumption needs to reflect the future inflation expectations at the same point in time as the market data on the bond and cover the period of time to that bond's maturity. On their own none of the sources of inflation estimates provided this information in the required

[12] An alternative approach is to assume that the nominal cost of debt in the constant and therefore the forecast inflation for the control period is the appropriate estimate for the inflation rate (i.e. the expected rate of inflation to be applied to the RAB).

[13] For December 2013 the figure was 2.7%.

[14] The CAA also notes that this approach may lead to a higher inflation estimate if there is an inflation risk premium in the nominal gilts. The average inflation risk premium between 1997 and 2007, as calculated by the Bank of England, was 0.3%. Bank of England, *Quarterly Bulletin*, 2012 Q3, Volume 52, no. 3.

detailed and reliable form. Therefore, in the final proposals the CAA used a range of estimates, and attempted to be as transparent as possible in these assumptions.

5.29 The CC's NIE work assumed inflation of 2.8% in respect of embedded debt and the mid-point of the range 2.7% to 3.2% for new debt.

5.30 PwC's advice was based on an inflation assumption of 2.8%. In the final proposals the CAA also undertook some analysis using an inflation rate of 3%.[15] Ultimately the choice of inflation estimate was a matter of judgement. While other inflation rates are also plausible, the CAA considered that its assumptions as an estimate of the expected future inflation rate contemporaneous with the market data were appropriate and within the range of plausible estimates.

Representations received

5.31 Sudarsanam restated previous criticism of the CAA’s approach to inflation both the value assumed and mechanics of its application.

CAA response

5.32 As considered in the proposed licence and restated above, there are numerous conceptual and practical approaches to estimating inflation and there is no single correct value.

5.33 In respect of the mechanics of reducing nominal market data for inflation, to arrive at real yields, in the proposed licence the CAA stated that the Fisher Equation[16] was theoretically preferred, but noted that the simple deduction method used by the CAA in some of its analysis was within the margin of accuracy of the underlying inflation estimate.

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[15] CEPA considered that the CAA had made an error in not using the Fisher Equation in some of its analysis. The CAA agrees that the Fisher Equation is theoretically preferred, but notes that the simple deduction method used by the CAA in some of its analysis is within the margin of accuracy of the underlying inflation estimate.

[16] The Fisher Equation is multiplicative ie nominal yield = (1+inflation rate) x (1+ real yield) -1, and the PwC and the CAA used this is most of the analysis. In Figure 6.6 in the Final Proposals, the CAA used the simple additive method ie nominal yield = inflation rate + real yield. Had the CAA used the Fisher Equation and an inflation assumption of c2.9%, instead of 3%, in Figure 6.6 in the Final Proposals then the resulting real yields of the investment grade bonds at HAL and GAL would have been the same as presented in that table.

Decision

5.34 The CAA continues to consider that the effect of its choice of inflation value, under either method of its application, is well within the range of plausible estimates.

Non-sterling bonds

Proposed licence

5.35 In the proposed licence the CAA stated that HAL considered that by omitting the cost of non-sterling bonds PwC and the CAA had understated the cost of debt. The CAA had not omitted non-sterling bonds in the calculation of the cost of debt, but instead concluded that the cost of sterling debt was an appropriate proxy for the cost of non-sterling debt (including the cost of any associated foreign exchange instruments).

5.36 HAL considered that the cost of non-sterling debt would be slightly more than the cost of sterling debt.

5.37 BA and RARE Infrastructure (on behalf of the Heathrow Airline Community) considered that non-sterling bonds may be cheaper than sterling bonds because of the shorter tenure.

5.38 In the proposed licence the CAA considered that the cost of sterling bonds remains a good proxy for the cost of non-sterling bonds.

Representations received

5.39 Sudarsanam suggested that the CAA erred by removing the non-sterling bonds from the calculation of HAL's cost of existing debt. He suggested that issuing foreign denominated bonds should reduce the cost of debt for HAL (which explains HAL's commercial incentive to raise debt finance through international markets). Furthermore, the removal of non-sterling bonds had lengthened the average maturity of HAL's debt and therefore led to an overestimation of HAL's cost of existing debt.

CAA response

5.40 The CAA sets a cost of capital for a notionally financed airport operator. This means the specific financing used by HAL and GAL are helpful benchmarks for the cost of debt for the notionally financed airport operator, but the CAA is not seeking to perfectly replicate HAL or GAL's financing arrangements. Having set an appropriate cost of debt benchmark, this means that HAL and GAL bear the risk (and any incremental costs) from their financing decisions in relation to timing, choice of debt instruments (e.g. fixed, floating, convertible etc) and the debt capital market used. This means it is reasonable for the CAA to exclude non-sterling bonds for the purpose of assessing a reasonable cost of debt for the notionally financed airport operator.[17]

5.41 Removing the non-sterling bonds increases the average maturity of HAL's remaining debt to around 17 years. However, the CAA considers an average maturity of 17 is consistent with a long-term financing assumption for the notionally financed airport. By way of comparison the average maturity of GAL's debt is 22.5 years.

CAA decision

5.42 The CAA concludes for the purpose of calculating the cost of debt that it remains appropriate to exclude HAL's non-sterling bonds and it is not necessary to further adjust for maturity differences.

Credit rating assumptions

5.43 BA considered that for HAL the CAA should assume a credit rating of A- at gearing of 60%. The CAA's assumption in the proposed licence, consistent with Q5, was for a solid investment grade (BBB/BBB+) at 60% gearing, which was slightly lower than HAL's actual rating of A- at 68% gearing. The CAA considered that while HAL might be able to achieve a higher rating than the CAA has assumed, the CAA's gearing and credit assumption gave it comfort that HAL would be able to finance its activities over Q6. The CAA also noted that HAL's actual financing included credit enhancements including security over assets and cross guarantees. Consistent with the policy to move to a full financial ring fence over time, the CAA assumed a simple debt structure which did not include such credit enhancements.

Representations received

5.44 Sudarsanam suggested that HAL's bonds with a lower rating (BB) than the CAA assumption for the notionally financed company should be removed from the assessment of HAL's cost of existing debt.

[17] As noted in paragraph 5.35 the CAA is in effect using sterling bonds as a proxy for non-sterling bonds.

Furthermore, as HAL has achieved an A- credit rating on its senior debt which accounted for 67% of its capital structure, Sudarsanam suggested the BBB rated bonds should also be removed.

CAA response

5.45 HAL's subordinated bonds (rated BB) are a shorter maturity than its other financing, so their removal impacts the average maturity of the remaining bond portfolio. Sudarsanam suggested the CAA adjusts for this, rather than removing subordinated bonds and not adjusting for the change in portfolio maturity.

5.46 The CAA agrees that HAL's subordinated BB rated bonds are rated below the CAA's assumption for an investment grade notionally financed airport operator, and are therefore inappropriate for benchmarking purposes and much of the CAA's analysis in the final proposals and proposed licence does not include them. PwC carried out a sensitivity by removing these bonds and the impact on HAL's cost of debt was negligible (0.01%), partly as a consequence of their shorter maturity.

5.47 Removing the BB rated bonds increases the average maturity of the remaining debt portfolio, but this longer maturity is still consistent with the assumption of long-term financing for the notionally financed airport operator.

5.48 The CAA considers that it should include BBB rated bonds in the HAL debt portfolio, as these are consistent with its investment grade financing assumption. The fact that HAL is able to achieve 67% senior debt gearing with an A- rating is helped by its whole business securitisation (WBS). This financing structure provides significant benefits and additional protections to debt investors, such as stand-still agreements, liquidity facilities, additional covenants and restrictions on shareholder distributions. These support higher gearing for a given credit rating. The UK water sector provides further examples of securitisation structures being used by companies and obtaining higher leverage, while maintaining investment grade ratings.[18]

[18] PwC (2013), *"Cost of capital for PR14, Methodological considerations*".

Decision

5.49 The CAA concludes that a portfolio of HAL's bonds excluding the BB rated bonds (but including BBB rated bonds) remains an appropriate benchmark for the notionally financed airport.

Cost of existing debt - use of HAL bonds and refinancing incentives

Proposed licence

5.50 In the proposed licence the CAA stated that BA considered that the CAA had overestimated the cost of debt because it included HAL's bonds which were the subject of basis point incentives established to achieve the refinancing associated with the change in control of HAL and/or in order to allow gearing well over 60% and/or to allow easier payment of dividends. BA considered that the CAA should have used benchmark indices only. The CAA stated that PwC compared HAL and GAL bonds to benchmark indices and concluded that the airport operators' bonds were issued at yields to maturity that were less than the benchmark indices.

Representations received

5.51 Sudarsanam suggested that HAL's cost of existing debt should have been calculated by stripping out the effect of refinancing uplifts (which took place in August 2008). He suggested these uplifts were designed to serve the interests of owners and not customers.

CAA response

5.52 HAL has argued that original cost of debt (prior to refinancing uplifts) was applicable to a lower geared business with a credit rating of AA-/A+. The cost of debt including refinancing uplifts is therefore more consistent with its current business and a notionally financed airport business.

Decision

5.53 The CAA considers there is some validity in HAL's argument. Furthermore, during the course of its analysis the CAA has shown that the historical issuance costs (including financing uplifts) for HAL (and GAL) were significantly below the A/BBB benchmark corporate borrowing cost and can therefore be considered an efficient cost of debt.

Cost of existing debt - benchmark indices

Representations received

5.54 Sudarsanam suggested that the CAA erred by using benchmark indices which include bonds issued by financial institutions. During the financial crisis following Lehman collapse the yields on financial institutions' bonds increased by more than that of non-financial institutions' bonds of the same credit rating.

CAA response

5.55 The choice of benchmark index for assessing the cost of debt is a matter of regulatory discretion. The most important attribute for the selection of benchmark index is the ratings used to compile the index, which should be consistent with the target rating for the notionally financed airport operator.

5.56 The BoAML index used by PwC and the CAA includes financial institutions, whereas other index providers, such as iBoxx, prepare some corporate bonds indices which specifically exclude financial institutions.

5.57 Prior to 2008 the difference between the two indices was negligible, as is the situation now.[19] However, during the financial crisis a gap opened between these two indices as a consequence of higher yields for financial institutions. The average difference between the two indices over a 10-year period is 0.57%.

5.58 PwC considered that airport operators were able to finance themselves at rates significantly below the BoAML BBB/A benchmark rate. This was partly attributed to the time of issuance and partly the ability of airport operators to raise debt at lower cost than corporate peers of similar rating. This observation is also consistent with the fact that financial institutions faced higher borrowing costs during the financial crisis.

5.59 For this reason PwC placed more weight on the historical borrowing costs of the airport operators in constructing their range for the embedded cost of debt:

[19] As at 28 January 2013, the yield on the iBoxx non-financials A index was 4.26% and the yield on the BoAML corporate index (including financial institutions) was 4.28%. The two series are charted in Figure 5.3 below.

"For the purpose of estimating the cost of embedded debt, we continue to use the lower of the two estimates i.e. those based on HAL and GAL's actual cost of embedded debt rather than estimates based on the historical averages for benchmark indices."[20]

5.60 PwC calculated a cost of existing debt range of 3.15% to 3.65% based upon airport operator bond issues, compared to a range of 3.5% to 4.2% using the BoAML benchmark indices. Were the iBoxx index to be used (without financial institutions), then the range would be closer to 2.4% to 3.3%.

5.61 The CAA still considers assumptions for the embedded cost of debt of 3.3% (HAL) and 3.1% (GAL) are reasonable. They are both at a point of overlap between the two approaches. They are at the bottom end of the range based upon airport operator bond issues, at the top end of the iBoxx range (excluding financial institution issuers) and below the BoAML range which includes financial institution issuers. These two assumptions also take account of the historical differences in cost of debt for the two airport operators.

Decision

5.62 Taking account of the representations received on the embedded cost of debt the CAA continues to use the same figures prepared for the proposed licence.

Cost of new debt

Proposed licence

5.63 The proposed licence also considered the appropriate value for the cost of new debt.

5.64 In the proposed licence, the CAA did not agree with HAL's view that PwC's forward-looking adjustment was flawed. PwC's October report[21] clearly sets out the broader concept behind the adjustment - that Quantitative Easing (QE) affected the yields on government gilts the most and corporate bonds slightly less. PwC noted that as QE unwinds the forward curve suggests that gilt yields would rise by c90bps. PwC considered that the unwinding of QE will affect corporate bonds slightly less (c70bps). Had PwC not used any

[20] PwC (2013b), Page 34.

[21] PwC (2013b), *"Estimating the cost of capital for designated airports"*, October 2013.

forward-looking adjustment the pre-tax WACC would have been c12bps lower. If the CAA used HAL's preferred 'one-to-one' relationship the CAA calculated that the pre-tax WACC would have been 3bps higher.

5.65 HAL considered that the change in the mid-point in PwC's estimate of the forward-looking adjustment was inexplicable and meant that the WACC was understated by 1bp. The CAA stated in the proposed licence that PwC's change in mid-point arose because of the availability of data, was consistent with the reduction in length of the control period by three months and the impact, as calculated by HAL, was trivial.

5.66 HAL considered that the CAA's range for the cost of debt incorporated a downward adjustment of 25bps to the top end of the range for the cost of new debt and that this was arbitrary. The CAA considered that because of a lower risk profile HAL was clearly towards the bottom of the combined range identified by PwC for both airport operators. In fact the CAA took the mid-point in the cost of new debt range estimated by PwC for HAL (2.6%) and reduced it slightly for a higher inflation forecast than assumed by PwC.

5.67 In the proposed licence the CAA considered that the CC's estimate of the cost of new debt for NIE (2.4%) was slightly below the CAA's assumption in the final proposals for HAL (2.5%) and significantly below the CAA's assumption for GAL (2.75%). The CAA's cost of new debt for HAL was based on the mid-point of PwC's recommended range, and its cost of new debt for GAL was higher to reflect the lower credit rating achieved by GAL.[22]

5.68 In the proposed licence the CAA noted that in October 2013, HAL raised £750 million by issuing a 35 year bond at a yield of 4.6% (rating A-). After deducting inflation this equated to a real cost of debt in the region of 1.6 to 1.8%. The final proposals assumed that the cost of new debt for HAL over Q6 would be 2.5%, which was based on current rates of 1.8% plus PwC's forward-looking adjustment (0.7%) to reflect the unwinding of QE over Q6.

[22] With actual gearing of 62% GAL achieved a credit rating of BBB+, while with actual gearing of 67% HAL achieved a credit rating of A- (and with an actual gearing level of 78% HAL achieved a rating of BBB).

5.69 In the proposed licence the CAA stated that HAL's debt issuance in October was consistent with and therefore supported the CAA's final proposals.

Cost of new debt – calculation of averages and assessment of cost of new debt for HAL and GAL

Proposed licence

5.70 BA considered that PwC had made a mathematical error in its averaging of traded bond yields for HAL and GAL, inflating its range by 10bps. The CAA also calculated weighted averages of the bond yields which confirmed PwC's work.

Representations received

5.71 Sudarsanam suggested the averaging technique used by PwC and the CAA increased the benchmark yields used to assess the cost of new debt. He reiterated BA’s argument that a figure above 4.6% (nominal, ie including inflation) cannot be justified for HAL.[23]

CAA response

5.72 PwC segmented outstanding airport operator bonds into four maturity bands and prepared a simple average across these four bands.[24] This technique avoids over-representing any one maturity band.

5.73 Using this technique, PwC calculated an average yield for HAL’s outstanding bonds of 4.6% and 4.8% for GAL [25] Within the 10-15 year maturity band, HAL was 4.6% and GAL was 4.5%, whereas for the 15+ year maturity band HAL was 5.1% compared to GAL at 5.2%. Given these benchmarks, the CAA still considers 4.7% is an appropriate benchmark long-term cost of new debt for HAL. To this figure the CAA deducted inflation and incorporated an uplift to allow for the expected increase in the cost of new debt over Q6.

CAA decision

5.74 The CAA recognises that there are different techniques to calculate an average and that the approach that PwC has taken is one of the appropriate techniques. The CAA considers that the cost of new debt

[23] Annex B, p31-33, BA’s Response.

[24] PwC (2013b), Table 7.4.

[25] As at June 2013.

as set out in the proposed licence remains appropriate.

Cost of new debt – choice of bonds

Representations received

5.75 Sudarsanam reiterated arguments raised in the estimation of the HAL's cost of existing debt in relation to the choice of bonds used to estimate the cost of new debt. However, to assess the cost of new debt he did not suggest the CAA disregard any bonds below a rating of A- (as BA suggest). Rather, he suggested that there is more uncertainty around both HAL's forward-looking rating and likely future bonds yields, and so he suggested HAL's BBB rated bonds were included to estimate a cost of new debt. He suggested excluding the BB rated bonds from this estimation.

5.76 The CAA set out the arguments for including HAL's BBB rated bonds in relation to estimating the embedded cost of debt (as set out in paragraph 5.43 onwards). These arguments are equally valid for estimating the cost of new debt. The CAA therefore agrees with Sudarsanam that HAL's BBB rated bonds should be included in the estimation of the cost of new debt.

CAA response and decision

5.77 The CAA also agrees HAL's BB rated bonds should also be excluded from the estimation of the cost of new debt, as these bonds fall below the CAA target investment grade criteria. Because of the shorter maturity of these bonds (which offset the lower credit quality), their yield is little different to the average yield across HAL's current debt portfolio and their exclusion is immaterial to the estimation of the cost of new debt.

Cost of new debt – single cut-off date

Proposed licence

5.78 In the proposed licence the CAA stated that HAL considered that PwC's estimate of the cost of new debt was over reliant on a single data point and that PwC had acknowledged that yields were increasing. HAL considered that this meant that the final proposals understated the cost of debt. In contrast, CEPA considered that the reliance on a single cut-off date meant that the final proposals overstated the cost of debt. The CAA considered that:

- PwC combined spot rates with the forward-looking adjustment and hence had allowed for an increase in yields going forward. Movements in the market since PwC's cut-off date were consistent with PwC's recommendations.
- PwC tested its assumption on the cost of new debt to recent period averages. Furthermore, in the final proposals, the CAA also set out the 12-month average for A and BBB rated bonds of 1.1% and 1.8% respectively. These averages were less sensitive to the cut-off date and once PwC's forward-looking adjustment (70bps) was included, they suggested that the cost of new debt was in the region of 1.8% to 2.5%.

5.79 HAL considered that the CAA should update its estimates for the latest market evidence and calculated that this would increase the WACC by 1bp.

5.80 The CAA did not update its cost of debt assumption for the latest market evidence. By taking an approach which placed limited reliance on the choice of data cut-off, the CAA considered that its cost of debt assumption was robust to the usual market movements. Furthermore, the purpose of the uplift applied to the cost of new debt was to reflect PwC's view that debt yields would slowly rise over Q6. Furthermore the effect, as calculated by HAL, was trivial.

Representations received

5.81 Sudarsanam suggested the CAA erred by using a single cut-off date in the assessment of the cost of new debt.

CAA response

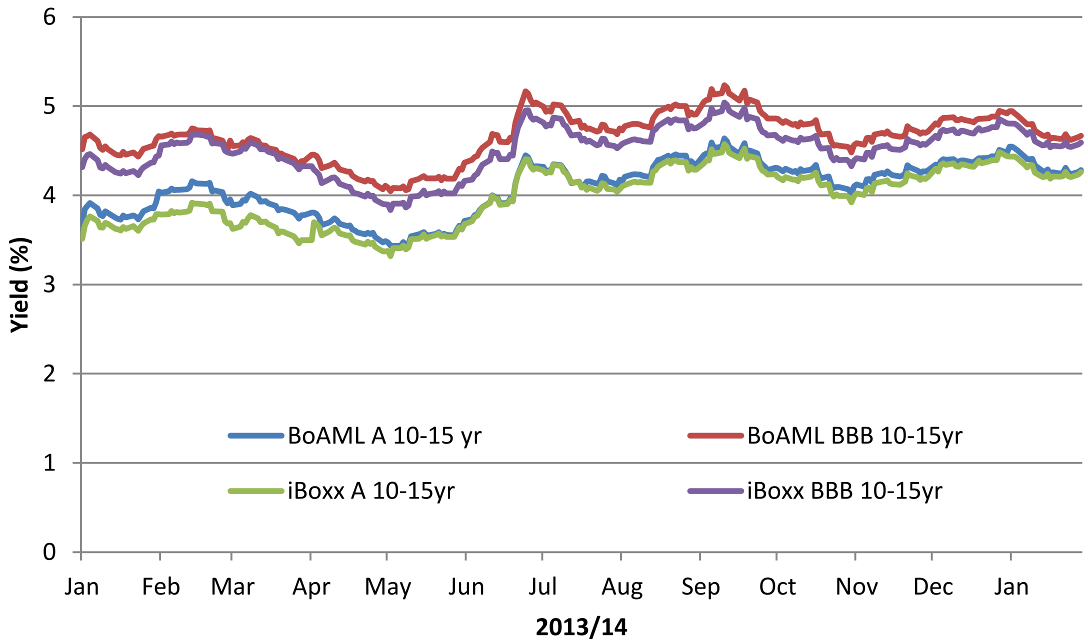
5.82 The CAA considers there are good reasons for using both historical averages and up to date figures measured at a point in time. Historical averages help to smooth out some of the inherent volatility in financial market data; however, at times of economic change, historical averages may no longer reflect an appropriate forward-looking estimate for the cost of new debt.

5.83 PwC therefore recommended using up to date bond yield data, adjusted for market expectations for the likely increase in the cost of debt during Q6 (as observed from forward curves). The point estimates were also checked against recent historical averages to ensure the point estimates were not overly sensitive to the exact date selected.

5.84 The CAA agrees with this approach. Given corporate bond yields have been generally rising during 2013, any approach which uses a historical average risks underestimating the likely cost of new debt in Q6.

5.85 UK corporate bond yields are set out in Figure 5.3 below.

Figure: 5.3: Corporate bond yields



Source: PwC analysis

5.86 Since the publication of the proposed licences, which relied on data up to the end of June 2013, corporate bond yields have remained broadly flat. The CAA therefore considers the cut-off date used for the assessment of the cost of new debt in the proposed licences remains valid. More recent movements in cost of debt benchmarks are within the range of normal market movements and are accommodated by the forward-looking assessment.

Decision

5.87 Taking account of the representations received on the cost of new debt the CAA continues to use the same figures as the proposed licences.

Fees and new issue premium (NIP)

Proposed licence

5.88 In the proposed licence the CAA noted that one difference between the CC's NIE provisional determination and the CAA was the allowances for fees - the CC allowed for significantly lower fees than the CAA. The CC included an allowance for issue costs of 10bps on the cost of new debt. In addition, unlike the CAA, the CC allowed holding costs (ie the cost of drawing down funds and holding them before they are needed) on new debt of 20bps. Combining these figures, they equated to 6bps on the overall cost of debt. In comparison the CAA allowance for fees was 15bps for HAL and 20bps for GAL. Consistent with its previous price controls, the CAA did not include an allowance for holding costs.

5.89 HAL reiterated its previously expressed views and stated that the CAA should include a NIP on the new debt. The CAA stated that its approach to estimating the cost of existing fixed rate debt meant that if the NIP existed it was already included in the cost of existing debt. The CAA considered HAL's views that the cost of new debt should include an additional, specific allowance for NIP. Given the CC did not provide for a specific additional allowance to cover any NIP, the CAA continued to consider that consistent with PwC's advice, it was not appropriate to include an additional allowance for Q6.

5.90 HAL considered that the CAA had not fully allowed for the costs of its revolving credit facility. The CAA considered that the fees allowance for HAL included in the final proposals was the same as that allowed in Q5 and greater than that allowed by the CC in its NIE provisional determination. Furthermore, as previously stated, other regulators such as Ofgem, provide no allowance for such fees. The CAA considered that on balance the allowance for fees included in the final proposals remained appropriate.

5.91 RARE Infrastructure noted that short maturity debt is significantly cheaper than longer maturity debt. This meant that to fund short-term liquidity the airport operators could borrow short term (at rates less than the CAA's cost of debt assumption on new debt) rather than issue long-term debt and suffer the cost of carry. The CAA considered that the treasury policy is a matter for the companies and was not advocating any specific treasury approach, but highlighted this issue to show that there were alternative approaches. Furthermore the CAA considered that this demonstrated that the cost of debt should be viewed in the round rather than giving focus on individual components in isolation.

5.92 In the proposed licence the CAA considered the issues raised in responses to the final proposals in the round. The CAA considered that the range identified by PwC remained the appropriate range. The appropriate point estimate within this range was a matter of judgement and therefore it was not surprising that some responses to the consultation suggested that the cost of debt allowance was too high, while some responses suggested that it was too low.

Conclusion in the proposed licence

5.93 Taking all the evidence in the round in the proposed licence the CAA considered that the cost of debt of 3.2% was appropriate for Q6. Furthermore, in the proposed licence the CAA stated that its estimate was consistent with the CC's NIE provisional determination and the debt issued by HAL since the final proposals.

Decision

5.94 Taking account of the representations received the CAA's decision is that the appropriate cost of debt is 3.2% for Q6 for HAL and GAL. This value is the same as set out in the proposed licence.

CHAPTER 6

Estimating the WACC: cost of equity

6.1 The cost of equity is calculated using a CAPM framework. The key assumptions in the CAPM framework are the TMR, the RFR and the equity beta. The following sections review these issues.

Total market returns, risk-free rate and the equity risk premium

Proposed licence

Total market returns

6.2 HAL considered the single period dividend growth model (DGM) that it thought PwC had used to estimate the forward-looking TMR was too simplistic, resulting in a potentially inaccurate estimate of true forward-looking TMR. Contrary to HAL's response, PwC used both a single period DGM and a two period DGM.

6.3 HAL considered the Bank of England analysis suggested a TMR of 7%, however, the CAA considered that the CC's analysis of the Bank of England data suggested the TMR fluctuates around 6.5%.[26]

6.4 In the proposed licence the CAA noted that the CC and the CAA took a similar approach to considering the TMR and the ERP. First, that the TMR was a key component in the estimation of the ERP and second, that both historical evidence and forward-looking evidence should be considered.

6.5 Compared to the final proposals and PwC's advice to the CAA, the CC's provisional determination on NIE appeared to present two broad differences:

- additional evidence on the estimate of the TMR; and

[26] For example, figure 13.6 of the CC's Provisional Determination for NIE.

- a different weight placed on historical estimates compared to forward-looking estimates.

6.6 The CAA stated that the additional evidence included in the CC's report all pointed to a lower estimate of the TMR than the CAA had assumed in its final proposals (6.75%).

- Fama and French approach to estimating historical TMR suggested the long-run TMR was in the region of 5.5% and possibly around 4.5% more recently.
- A forward-looking estimate which, although similar in approach to PwC, assumed that dividend growth would be lower than Gross Domestic Product (GDP) growth. (PwC assumed that long-run dividend growth would be the same as GDP growth). [27] The CC's method suggested 6.5% was the upper limit of the TMR.

6.7 The CAA also considered that the CC appeared to place greater emphasis on forward-looking rates and was clearly concerned with the return required for that period only. In NIE's case this was the period 1 April 2012 to 30 September 2017. In contrast, the CAA's final proposals placed greater emphasis on longer run averages, and used a point estimate of 6.75% (the top of PwC's recommended range of 6.25% to 6.75%).

6.8 The CAA noted that its RAB-based control period would run from 1 April 2014 to 31 March 2019 (or 31 December 2018 for HAL), while the CC's review covered the period 1 April 2012 to 30 September 2017. Therefore while there was a large degree of overlap, the two periods were not identical.

6.9 The CAA also stated that forward-looking estimates required more judgements to be made and were inherently more unstable - for example the reliance on forward-looking assumption of dividend yields.

6.10 In the proposed licence the CAA considered that the CC's provisional determination was unambiguous: 6.5% was the upper limit. Therefore the CAA considered that the view set out in the final proposals that the TMR was 6.75% was not consistent with the CC. In the final

[27] A further point of difference is PwC included a specific allowance for returns through stock buybacks.

proposals, the CAA noted that PwC recommended a range for the TMR of 6.25% to 6.75%. The CAA also stated in the proposed licence that the range was probably 6.5% to 7%, the upper end reflected some of the higher historical evidence and regulatory decisions in other sectors. The CC's NIE work suggested that the appropriate range was 5.0% to 6.5%, although the CC also suggested that there was less support for the lower end of its range. In light of the CC's provisional determination, the CAA considered that it was appropriate to place more weight than it did in its final proposals on the forward-looking estimates and take into account the new evidence which suggested the historical estimates might be lower than the CAA had previously considered. The CAA noted, however, that the CC's point estimate of approximately 5.9/6.0% appeared below all other evidence that the CAA had received and below PwC's recommended lower estimate of 6.25%.

6.11 The CAA also considered that it was aware that in 2010 the Office of National Statistics (ONS) changed the way in which RPI inflation was calculated, which led an increase in measured RPI inflation of approximately 50bps[28] (the formula effect). This meant that any estimate of the real (RPI-stripped) TMR before 2010 was likely to be c50bps higher than estimates after 2010. PwC quoted the difference to be 32bps.[29] The CAA stated that Ofgem recognised this in its recent assessment of Electricity Distribution business plans when it estimated that the formula effect was 40bps and reduced its TMR from 7.25% to 6.85%.

6.12 In the proposed licence the CAA therefore concluded that the low end of the plausible range for the TMR (6.5% to 7.0%) in the final proposals was too high and that there was evidence, as put forward by the CC and the impact of the RPI formula effect, to suggest that the TMR could be as low as 5.5% or 6%.

6.13 In light of the additional evidence arising from the CC's NIE provisional determination in the proposed licence the CAA revised its point

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28 http://www.ons.gov.uk/ons/about-ons/get-involved/consultations/archived-consultations/2012/national-statistician-s-consultation-on-options-for-improving-the-retail-prices-index/options-for-improving-rpi-consultation-document.pdf

29 ONS (2011): *CPI and RPI: increased impact of the formula effect in 2010.*

estimate for the TMR to 6.25% which was 50bps lower than its final proposals.

6.14 The CAA noted that the CC's views on TMR (and all components of the WACC) were provisional, and the final determination was expected in 2014. The CAA noted that it was possible that the CC revised its views for the final determination and used a TMR which was greater or less than the 6%. In reaching its views the CAA was cognisant that the CC’s final determination may differ to its provisional determination. The CAA linked its revision in the TMR to the new evidence presented by the CC rather than specifically to the CC's choice of a point estimate for the TMR of 6%.

6.15 In the proposed licence the CAA considered that its view that the appropriate TMR assumption of 6.25% was consistent with the CC's estimate of 6% because of the slightly different time periods covered by price controls. The CAA also stated that there might be some reversion to the longer run historical rates towards the end of Q6 (and after the end of the NIE control period on which the CC has opined). The CAA also noted that this was consistent with Q5 when the ARR and the ONS change to inflation were taken into account.

Risk-free rate and the equity risk premium

6.16 In the proposed licence the CAA considered that once a view on the TMR was reached, the purpose of the risk-free rate (RFR) was to split the TMR into the RFR and the ERP. The final proposals included a RFR of 1%. PwC's recommended range for the RFR was 0.5% to 1%. The CAA stated that in effect, the choice of RFR makes little difference to the cost of equity once the TMR is fixed.

6.17 Having decided to reduce the TMR compared to the final proposals, in the proposed licence the CAA assessed options: reduce the RFR, reduce the ERP or a mixture of the two.

6.18 PwC's advice was that the appropriate ERP was 5.75%, and that the range for the RFR was 0.5% to 1.0%.[30] to remain consistent with PwC's advice the CAA's view was that the ERP should be 5.75% (unchanged from the final proposals) and the RFR should be 0.5% (reduced from 1.0% in the final proposals). In the proposed licence

[30] PwC's advice was that the RFR was in the range 0.5% to 1.0% and was consistent with the TMR range of 6.25% to 6.75%.

the CAA noted that for the avoidance of doubt, the reduction in the RFR was to ensure consistency and was a consequence of the reduction in the TMR, and should not be viewed in isolation from the TMR and ERP. Furthermore, the CAA's approach to estimate the total cost of debt (rather than the RFR and the debt premium separately) meant that the RFR estimate did not affect the cost of debt.

6.19 The CAA noted that the CC estimated that the appropriate range for the RFR was 1.0 to 1.5% and the ERP was 4 to 5%. The CC narrowed this range slightly by increasing the lower end of the range by 50bps. In effect the CC used a RFR of approximately 1.25% and an ERP of approximately 4.75%.

6.20 In the proposed licence the CAA calculated that if it had used the CC's RFR estimate (1.25%) and the CAA's TMR and equity beta estimate of HAL[31] (6.25% and 1.10 respectively) the post-tax cost of equity would be 6.77%. Alternatively, if the CAA used the CC's ERP estimate (4.75%) and the CAA's TMR and equity beta estimate for HAL, the post-tax cost of equity would be 6.74%. The proximity of these estimates (6.77% and 6.74%) and CAA's estimate of the post-tax cost of equity for HAL of 6.84% led the CAA to conclude that, consistent with its view in the final proposals, once the TMR is set, the cost of equity is not significantly affected by the choice of RFR (within a reasonable range).

CAA response and decision

6.21 As the CAA has not received additional representations on the TMR, RFR and ERP, the CAA’s decision is, for the reasons set out in the proposed licence and repeated above, that it is appropriate to use a TMR of 6.25%, a RFR of 0.5% and an ERP of 5.75%.

Beta and equity risk

Proposed licence

6.22 The CAA stated in the proposed licence that it had seen no evidence or argument to change its views on the appropriate beta contained in the final proposals. The CAA remained of the view that there had been no material change in the risk of HAL and GAL relative to the economy and thus there was no change in the asset beta.

[31] The same conclusion is reached if GAL's beta is used.

6.23 In the final proposals the CAA set out a comparison of its beta assumptions for HAL and GAL with National Grid and Network Rail, and compared its vanilla WACC with those set by other regulators.

6.24 The CAA set out various beta estimates for comparative airports. HAL compared volatility of traffic at Heathrow with Fraport group of airports and AdP group of airports, and found it impossible to see how the CAA could conclude that HAL had a lower asset beta than Fraport and AdP. The CAA considered that its final proposals set out the reasons why it was appropriate to conclude that HAL was lower risk than Fraport and AdP - Heathrow had strong demand and was operating closer to capacity.

6.25 The CAA also noted that, in respect of pensions risk, the proposed licence allows the recovery of pension deficit costs in the operating expenditure (opex) allowance.

6.26 HAL considered that the CAA had not been clear as to the appropriate measurement of debt in the gearing assumption used to re-gear betas from comparator airport groups. The CAA stated that the WACC annex to the final proposals (paragraph 7.64 *et seq*) clearly considered the options and expressed the CAA's view on this issue.

6.27 Oxera considered that increasing competition had increased the risk of GAL and therefore the beta should be higher. The CAA noted that it had recently undertaken a market power determination and had concluded that GAL had substantial market power and was likely to maintain its substantial market power. The CAA considered that it would therefore be inappropriate and inconsistent with its market power determination to conclude that the beta should be increased because of competition.

6.28 GAL also stated that its analysis showed that GAL was riskier than Q5, because its increase in absolute volatility had been greater than the increase in absolute volatility at HAL and Stansted Airport Limited (STAL). Unfortunately, Oxera did not provide an analysis about how GAL's volatility compared to the economy more widely. The CAA remained unconvinced that Oxera's analysis showed that GAL was more risky compared to the market. The airlines provided evidence showing that some of this absolute volatility was due to one-off events.

6.29 BA and CEPA considered that the evidence previously submitted suggested that HAL's equity beta was less than 1. The CAA considered that it was slightly above 1 and its final proposals (paragraph 7.26 et seq) set out the range of evidence on betas which supported this view.

Taxation

6.30 The CAPM calculates the post-tax cost of equity. The CAA sets a pre-tax WACC and therefore need to uplift the post-tax cost of equity by the tax rate to produce the pre-tax cost of equity. The CAA noted that it and the CC's Q5 recommendations applied the statutory tax rate to the real cost of equity. The CAA considered that it was not appropriate to take account of the opposition party's tax plans.

6.31 On taxation, the CAA considered that a consistent approach is preferred and therefore considered that the statutory tax rate, with no adjustment other than to take into account the policy set out by the government (as far as is known) was appropriate.

Conclusion included in the proposed licence

6.32 The CAA considered the issues raise in responses to the final proposals in the round. The CAA considered that the range identified by PwC remained the appropriate range. The appropriate point estimate was a matter of judgement and therefore it was not surprising that some responses to the consultation presented argument and evidence to suggest that the cost of equity allowance was too high, while some responses suggest that it was too low.

6.33 The CAA's proposed licence concluded that the appropriate asset beta for HAL was 0.50 and for GAL was 0.56, and these translated into equity betas of 1.10 and 1.13 at 60% and 55% gearing respectively.

6.34 The CAA's proposed licence also concluded the appropriate tax uplift was 20.2% and that this was applied to the real cost of equity.

6.35 Combining various assumptions, in the proposed licence the CAA concluded that the appropriate pre-tax cost of equity was 8.58% for HAL and 8.76% for GAL.

Representations received

6.36 The CAA also received representations on the cost of equity from Sudarsanam on behalf of BA and Virgin. He focused on the beta used in the estimation of HAL’s cost of equity.

6.37 Sudarsanam reviewed a range of operational and financial evidence and concluded that *“evidence indicates strongly that the equity beta is less than 1, not the 1.1 used by the CAA”.*[32]

6.38 Sudarsanam suggested that the movement in both airport operator and airline betas suggested HAL’s asset beta had decreased since Q5. This was supported by HAL’s strong and resilient operational and financial performance over this period.

6.39 Sudarsanam claims that ‘*that the CAA concludes, from its point estimate, that it [the asst beta] has actually increased from 0.47 [for Q5] to 0.50 [for Q6]’.*[33]

CAA response

6.40 There is a large overlap in the evidence reviewed by Sudarsanam and that prepared and considered by the CAA in both the final proposals and proposed licence. Sudarsanam had not introduced new evidence for the CAA to consider.

6.41 The strong and resilient operational and financial performance of HAL over the past 5 years cannot be used directly to estimate its beta. The CAA agrees with both BA and Sudarsanam that this does indicate that HAL is a business below average systematic risk. This is consistent with the point estimate of 0.50 for HAL’s asset beta, compared to the average asset beta for large FTSE companies of around 0.85.[34]

6.42 The CAA considers the best evidence on changes in systematic risk for UK airports comes from comparator airports. These were reviewed by PwC.[35]. This showed that the average asset beta for a comparator group of international airports had fallen from 0.64 at the time of the Q5 determination to 0.56 at the end of June 2013. However, within this movement Copenhagen (0.39 to 0.64), Zurich (0.51 to 0.66) and Sydney (0.48 to 0.52) all had rising asset betas over the period. The CAA concluded that there was insufficient evidence to suggest that the asset beta for UK airports had changed over the period 2008 to 2013.

32 Susarsadam, Page 56.

33 Paragraph 6.2.42.

34 This assumes average FTSE-100 equity beta of 1, simple average gearing of 17% on a net debt basis (source: Capital IQ) and debt beta of 0.1.

35 PwC (2013b), Table A9.2.

6.43 The CAA does not consider the movement in airline betas as helpful evidence.[36] Changes in airline betas may be a consequence of changes in the overall aeronautical market (so a consistent change would be expected for airports), or changes taking place within airline businesses (with little impact on airport betas), or contractual changes in the way airlines and airports interact (which could pass systematic risk from airlines to airports and would mean the change in airport betas is the opposite to the change in airline betas). Because of the difficulty of unpicking the reasons for the movement in airline betas, the CAA focuses on the changes in the asset betas for international airport businesses.

6.44 Sudarsanam's reference to the Q5 asset beta of 0.47 is incorrect. The value of 0.47 reflects the midpoint in range of the CC's and the CAA's estimate of asset beta for Q5. Neither the CC nor the CAA quoted a point estimate for the asset beta for Q5. However, it is possible to interpolate that the CC/CAA used a point estimate for the post-tax cost of equity (7.33%) which represented the 88th percentile in the post-tax cost of equity range (4.75% to 7.68%). Furthermore, when values for the other components of the Q5 post-tax cost of equity are taken into account, the CC/CAA's cost of equity of 7.33% could only be achieved by using an asset beta in the range of 0.49 to 0.52. An alternative interpolation approach, suggests that the Q5 asset beta point estimate was 0.50.[37] It is therefore incorrect to assume that the asset beta used for Q5 was 0.47. The CAA concludes that its asset beta assumption for Q6 is the same as that used for Q5.

6.45 The CAA notes that Sudarsanam focuses his critique on the beta estimate and does not express a view as to whether or not the overall cost of equity in the proposed licences was appropriate.

Decision

6.46 Taking account of the representations received the CAA's decision is that the appropriate cost of equity is 8.58% for HAL and 8.76% for GAL. These values are the same as set out in the proposed licence.

36 PwC (2013b), Figure A9.B.

37 This alternative approach assumes that the CC/CAA assumed the same percentile in the range for all components of the post-tax cost of equity and also takes into account the ARR adjustment.

CHAPTER 7

Estimating the WACC: conclusions

Proposed licence

7.1 The CAA considered that the estimate of the cost of capital was ultimately a matter of judgement. The CAA also stated that some responses described differences in judgements between the consultee and the CAA to be errors. The CAA has considered a range of evidence and therefore made judgements about both individual components and the overall WACC. Those judgements have been set out in the proposed licence and previous consultations in this review.

7.2 In the proposed licence the CAA noted its view that, other than the top of the TMR range, the range for the WACC that was presented in the final proposals remained the appropriate range.

Figure 7.1: Summary of CAA's range

	HAL		GAL	
%	range	point estimate	range	point estimate
Gearing	60	60	55	55
Pre-tax cost of debt	2.78 - 3.45	3.20	2.95 - 3.58	3.20
Total market return[38]	6.25 - 6.75	6.25	6.25 - 6.75	6.25
Risk-free rate	0.50 - 1.00	0.50	0.50 - 1.00	0.50
Equity risk premium	5.75	5.75	5.75	5.75
Asset beta (number)	0.42 - 0.52	0.50	0.46 - 0.58	0.56
Equity beta (number)	0.90 - 1.15	1.10	0.90 - 1.17	1.13
Post-tax cost of equity	5.68 - 7.61	6.84	5.68 - 7.71	6.99
Tax rate	20.2	20.2	20.2	20.2
Pre-tax cost of equity	7.11 - 9.54	8.58	7.11 - 9.66	8.76
Pre-tax WACC	4.51 - 5.89	**5.35**	4.82 - 6.31	**5.70**

38 The TMR range stated is that based on PwC's advice. As noted in Chapter 6, the CC suggests that the TMR is not above 6.5%. For consistency the range in the table is the same as set out in the final proposals.

	HAL		GAL	
Vanilla WACC	3.94 - 5.12	4.66	4.18 - 5.44	4.90

Source: CAA analysis

7.3 In the proposed licence it was calculated that combining all the point estimates of the components the pre-tax WACC was 5.35% for HAL and 5.7% for GAL.

7.4 Compared to the final proposals, the CAA made one adjustment in the proposed licence to reduce the TMR by 50bps. This adjustment reduced the pre-tax WACC for both HAL and GAL by 25bps.

7.5 The proposed licence point estimate for HAL represented the 61st percentile in the range and the point estimate for GAL represented the 59th percentile in the range.

- The equivalent percentiles in the final proposals were 79th percentile (HAL) and 76th percentile (GAL).
- The equivalent percentiles for Q5 were 77th percentile (HAL) and 75th percentile (GAL).[39]
- The CAA noted that the CC point estimate for its NIE vanilla WACC represented the 55th percentile of its initial range.

7.6 In the proposed licence the CAA considered that, compared to the final proposals, the point estimates from the range better reflected the ARR and placed the appropriate emphasis on the asymmetric consequences of getting the WACC wrong without placing undue weight on this argument. The CAA considered that its conclusions address the airlines concerns in this respect.

39 The Q5 comparative percentiles are calculated on the basis of the ARRs of 6.01% (HAL) and 6.3% (GAL).

Figure 7.2: Comparison of the licence to Q5 decision

%	HAL	HAL	GAL	GAL
Q5 decision - headline WACC	**6.20**		**6.50**	
Q5 decision - ARR (effective WACC)		**6.01**		**6.30**
Reduction in Corporation Tax	(0.40)	(0.40)	(0.43)	(0.43)
Reduction in cost of debt	*(0.20)	(0.17)	*(0.20)	(0.17)
Reduction in GAL gearing	n/a	n/a	0.08	0.08
Reduction in cost of equity	*(0.25)	(0.09)	*(0.25)	(0.09)
Q6 licence	**5.35**	**5.35**	**5.70**	**5.70**

The effect of the ARR is included in the estimates of the changes in these components
Source: CAA analysis

7.7 In the proposed licence the CAA stated that the comparison to Q5 was complicated because the headline WACC of 6.2% (HAL) and 6.5% (GAL) was not applied to the RAB to calculate the price cap. Instead a lower rate, called the ARR, of 6.01% (HAL) and 6.3% (GAL) was applied. Compared to the Q5 ARR, the Q6 proposed licence was 66bps lower for HAL and 60bps lower for GAL.

7.8 The proposed licence (and repeated as Figure 7.2, here) showed how the CAA's final view related to Q5. Focusing on the comparison of the effective Q5 WACC with the Q6 proposed licence, the reduction in WACC was due to:

- reduction in corporate tax rates (c40bps);
- reduction in the cost of debt due to lower market yields (17bps);
- a reduction in the cost of equity and specifically the TMR assumption (9bps); and
- for GAL the reduction in gearing (8bps increase in the WACC).

Comparison to other sectors

7.9 The CAA's proposed licence concluded that a pre-tax WACC of HAL and GAL were 5.35% and 5.7% respectively. These translated into vanilla WACCs of 4.66% and 4.90% respectively. The CAA had calculated the appropriate values for the comparators.

7.10 In the following table, which was included in the proposed licence, WACCs from other sectors are presented. To facilitate the comparison:

- the WACCs were on a vanilla basis (ie excluding taxation); and
- where the regulator used the ARR (NATS En Route plc (NERL) and CC in respect of NIE), or equivalent adjustments (Ofgem and the Office of the Rail Regulator (ORR)) the values shown in the table had been adjusted to reflect the effective rate applied to a simple average of opening and closing RAB. Therefore the values in the table might differ to the 'headline' WACCs quoted in other sectors.

Figure 7.3: Comparison of CAA's views to other regulated sectors' vanilla, adjusted WACCs

Regulator	Sector	Status	Date of decision	Appropriate comparative
Ofwat	Wholesale water	Business plans	2013	4.00-4.50%[41]
Ofgem	WDP - Elect Dist	Fast-track business plan	2013	4.02%
CC	Northern Ireland Elect.	Prov. Determination	2013	4.02%
Ofgem	Gas Distribution	Determination	2012	4.11%
ORR	Network Rail	Determination	2013	4.22%
Ofgem	Gas Transmission	Determination	2012	4.30%
Ofgem	Elect. Trans., National Grid	Determination	2012	4.45%
Ofgem	Electricity Distribution	Determination	2009	4.59%
Ofcom	MCT	Determination	2011	4.60%
CAA	**HAL**	**Proposed licence and decision**	**2014**	**4.66%**
Ofgem	Elect. Trans., Scottish	Determination	2012	4.68%
Ofcom	Openreach	View	2013	4.90%
CAA	**GAL**	**Proposed licence and decision**	**2014**	**4.90%**
Ofwat	WASC	Determination	2010	5.10%
CAA	NERL	Determination	2010	5.54%
Ofcom	Rest of BT (not price controlled)	View	2013	5.70%

Note Ofgem: This is the lower figure after an adjustment is made by Ofgem equivalent to the ARR. In the excel models used by Ofgem to calculate the price controls, the closing RAB each year is discounted by the WACC, before applying the WACC to the simple average of the opening and adjusted closing RAB. Ofgem describe this as the NPV-neutral RAB base. For example see rows 13 to 32 of the RAV&Return sheet found at the following link http://www.ofgem.gov.uk/Networks/Trans/PriceControls/RIIO-T1/ConRes/Documents1/RIIO_ET1_FP_FinancialModel_dec12.xlsm.

Note CC: Although not explicitly stated in the CC's Provisional Determination, it appears that the CC did use the ARR as noted in one of the responses to the Provisional findings. http://www.competition-commission.org.uk/assets/competitioncommission/docs/2013/northern-ireland-electricity-price-determination/hastings.pdf

Note ORR: The value shown is the semi annual WACC used by ORR which is the same as the ARR.

Note CAA NERL: This is the vanilla ARR.

Source: CAA Analysis

7.11 The CAA considered that in addition to the CC's NIE provisional determination, the general direction of regulatory decisions and/or views continued to support the view that the WACC had reduced over recent years.

7.12 In November 2013, Ofgem assessed the Electricity Distribution plans against a cost of equity (6.3%), rather than a WACC because the cost of debt calculated by its indexation model was exogenous to the plans and assessment. The latest value calculated by Ofgem's indexation model for the cost of debt was 2.72% and combining this with the cost of equity of 6.3% and gearing of 65% equated to a headline WACC of 4.0% (equivalent to an ARR of 3.9%). The fast-tracked business plan of Western Power Distribution (WPD) used a vanilla WACC of 4.1% (equivalent to an ARR: 4.02%).[40] The previous electricity distribution control period Ofgem used an effective vanilla WACC of 4.59%.

7.13 In the proposed licence the CAA stated that the values quoted for the 2012 Ofgem decisions included the cost of debt as calculated by its indexation model at the time of the decision (2.92%). As noted above, Ofgem's indexation model was now calculating the cost of debt of 2.72%, and if this value was used in the 2012 WACCs they would have been c13bps lower than those quoted in the table.

7.14 In the proposed licence the CAA noted that water and sewerage companies' business plans for PR14 used vanilla WACCs in the range of 4% to 4.5% and were significantly below Ofwat's previous decision for PR09 of 5.10%. Although at the time of the proposed licence Ofwat had not yet published a WACC number, comments from Ofwat

[40] https://www.ofgem.gov.uk/ofgem-publications/84945/assessmentoftheriioed1businessplans.pdf

suggested that the vanilla WACC was likely to be at the lower end or below the rates used in the business plans.[41] For example:

- In a speech on 13 November 2013 to 'Water 2013' Sonia Brown, Chief Regulation Officer of Ofwat stated that the 'Cost of capital will fall [for the next control period compared to the current control period] - when companies put forward their proposals for the cost of capital in their business; there is a real opportunity for this number to start with a 3.'[42]
- In an announcement on 19 December 2013 Ofwat stated that 'Ofwat's initial testing of companies' views on risk and reward has shown that they are not in alignment with market evidence for the water sector'.[43]

7.15 The ORR's final determination confirmed its draft determination in respect of the WACC. In its determination the ORR assumed a headline vanilla WACC of 4.31%. However, it used a lower 'semi-annual' vanilla WACC of 4.22% to reflect the concept that returns can be reinvested. (The previous control period vanilla WACC was 4.75%).

7.16 The CAA stated that its work on NERL's price control was on-going and the CAA had not yet expressed a view on the appropriate WACC for the next control period (2015 to 2019).

7.17 The CAA considered that these examples of regulatory vanilla WACCs suggested that regulators have or were expected to reduce the vanilla WACC by around 40bps and 100bps (possibly more). Furthermore, the CAA noted that while it would be incorrect simply to apply the reductions seen in other sectors to the Q5 WACC to estimate the Q6 WACC, the CAA's reduction in the vanilla WACC of 25bps for HAL and 21bps[44] for GAL is less than that seen in other sectors.

7.18 The CAA concluded that its view on the WACCs for HAL and GAL was consistent with all recent evidence from other UK regulated utilities and the CAA's understanding of the risk and price control design of

41 Since the publication of the proposed licence, Ofwat has published guidance of 3.85% for the appropriate vanilla WACC for the PR14 business plans.

42 http://www.ofwat.gov.uk/mediacentre/speeches/prs_spe20131113water2013sbrown.pdf

43 http://www.ofwat.gov.uk/mediacentre/ibulletins/prs_ib2813pr14changes

44 For a consistent comparison, the Q5 vanilla WACCs were reduced to the ARR before being compared to the Q6 vanilla WACCs.

these industries.

Acquisition by USS of shareholding in Heathrow

7.19 On 24 October 2013 Universities Superannuation Scheme (USS) acquired from Ferrovial equity shares which equated to 8.65% of the share capital of FGP Topco Limited, the holding company which owns Heathrow Airport Holdings Limited and the ultimate parent company of HAL.

7.20 The CAA noted that PwC had estimated that USS's acquisition equated to a premium of 10% to the HAL RAB. Other estimates were in the range 13 to 15%.

7.21 In the proposed licence the CAA considered that consistent with the final proposals it saw value in examining market evidence such as this in the absence of publicly listed and traded equities. However, as previously stated the CAA was cautious when placing weight on this evidence.

7.22 In the proposed licence the CAA considered that the premium paid by USS suggested that there were investors who are willing to invest in airport operators such as HAL at the proposed price cap (including the WACC assumption) set out in the initial and final proposals (regardless of whether or not USS was investing in HAL for the long term). The CAA also noted that the USS acquisition and HAL's ability to issue long-dated debt at market rates shortly after the CAA's final proposals supported the CAA's views that the price cap proposals were financeable for HAL.

7.23 The CAA noted HAL's views that the cost of capital for pension funds such as USS is lower than other types of investors. However, the CAA stated that it assessed the risk and, therefore, the appropriate return for HAL independently of its ownership.[45] The CAA considered that different investors may have different risk/return preferences, but this did not alter the risk of the underlying asset (HAL). In fact, USS's investment confirmed HAL was a low risk asset because it was attractive to those investors seeking such assets (and, by definition, requiring lower returns).

45 This approach is common across regulators.

Overall conclusion in the proposed licence

7.24 The CAA noted that while it had built up its estimates of the WACC by assessing individual components it has also assessed the overall WACC by comparing it to other sectors, understanding where in the range of the WACC the point estimate was and understanding recent corporate finance transactions involving HAL and GAL.

7.25 The CAA also stated that there was no single correct answer for the value of the WACC. The CAA considered that its point estimate for the WACC was within a plausible and reasonable range. The CAA acknowledged that there were arguments to suggest that the appropriate value for individual components may be higher or lower than the point estimates for individual components chosen by the CAA, but that in the round the WACC estimates of 5.35% for HAL and 5.7% for GAL appropriately balanced these arguments.

Representations received

7.26 As noted in paragraph 4.3, HAL considered that the CAA's proposed WACC of 5.35% was flawed and did not accurately represent Heathrow's risk profile.

7.27 As stated in paragraph 4.4 the Heathrow Airline Community believed, as it had highlighted in previous submissions, that the CAA had made a number of errors in its calculation of the WACC which resulted in the CAA setting a WACC that is higher than it should be.

7.28 In his synopsis, Sudarsanam states *'I have been asked to consider particular issues in relation to the CAA's provisional conclusions on HAL's cost of capital by reference to this standard of review. I set out my conclusions in full at the end of the report. In the briefest summary, however, I consider that the CAA has erred and has overstated the cost of capital for HAL as a result.'*[46]

CAA response

7.29 The HAL and Heathrow Airline community representations do not present new evidence or argument.

7.30 In respect of Sudarsanam's paper, the points he raised on the 'particular issues' he was asked to consider have been discusses and assessed earlier in this document. The CAA notes that although

[46] Paragraph 1.4.2.

Sudarsanam calculated the effect on the WACC of some of the issues he raised; he did not express a value for the WACC. Furthermore, Sudarsanam's paper does not express a view on other components of the WACC calculation such as TMR, RFR, ERP, gearing, tax and the choice of point estimates from ranges (it is assumed that he was not asked to assess these components). Because Sudarsanam does not calculate the WACC, it is not possible to assess his paper against comparators (such as other regulatory sectors) nor undertake a financeability assessment (such as that set out in the in the Licence Grant document).

Decision

7.31 The CAA has assessed the representations received alongside all the evidence in reaching its view on the WACC. Based on the evidence contained in this document and analysis developed through the consultation process, the CAA considers that its WACC estimates accurately represent the airport operators' risk profile and are neither flawed nor higher than they should be. The CAA's decision is that the appropriate pre-tax WACC for Q6 for HAL is 5.35% and for GAL is 5.7%.