Gearing Sharing Mechanisms

Report on gearing sharing mechanisms and application to LHR

23 April 2019 | Version 1.0

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23 April 2019

FAO: Dan Rock
Civil Aviation Authority
CAA House, 45-49 Kingsway
London, WC2B 6TE

Dear Dan,

Gearing Sharing mechanisms and application to LHR

In accordance with our engagement agreement to provide expert financial advice under the terms and conditions of the Pan-Regulators' Framework Agreement for Economic, Financial and Related Consultancy Services with the Civil Aviation Authority (CAA), reference number 2587 (the "Engagement Agreement"), we have prepared a high level assessment of some of the possible mechanisms to share the benefits of additional gearing, with a particular focus on Ofwat's new proposed mechanism.

This assessment was prepared based on your instructions outlined in Section 1: Order form for Contract C (Contract 2587), which was an extension of the Order form dated 28 April 2017. The assessment has been prepared solely for the purpose of assisting you in reviewing the Ofwat publication "Putting the sector back in balance" and in considering whether a Gearing Sharing mechanism (ie. a mechanism to share financial returns in excess of regulatory settlement, solely due to higher gearing levels) might be appropriate for LHR (Heathrow airport). It should not be relied upon for any other purpose. Because others may seek to use it for different purposes, this document should not be quoted, referred to or shown to any other parties unless so required by court order or a regulatory authority, without our prior consent in writing. In carrying out our work and preparing our document, we do not seek to provide any legal services to you and have worked solely on your instructions.

Our assessment exclusively relies on publicly available information. We did not seek to review or verify any of this source data and information. Our scope did not include any consultation process with Heathrow Airport Limited, existing equity holders and lenders, credit rating agencies, airlines or any other stakeholders.

Our assessment may not have fully considered issues relevant to any third parties. Any use such third parties may choose to make of our paper is entirely at their own risk, and we shall have no responsibility whatsoever in relation to any such use. Whilst the CAA may use this paper in accordance with the term and conditions set out in the Engagement Agreement, we assume no responsibility or liability whatsoever to any third party in respect of the contents of our deliverable.

Please note that this assessment is high level and reflects our findings to date based on publicly available information and on discussions with you. We stress that a more detailed review may reveal additional considerations that this assessment has not.

Yours faithfully,

Ernst & Young LLP

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Background and Context

- In 2018, Ofwat launched a consultation to – in its words - put the water sector back in balance and rebuild trust therein. The consultation was concluded with the recommendation that company's outperformance of equity returns solely as a result of gearing levels materially above the regulator's assumptions (i.e., notional gearing) should be shared with customers.
- In its Q6 regulatory settlement for Heathrow airport (LHR), the Civil Aviation Authority (CAA) has assumed a notional gearing ratio of 60%. However, the actual gearing at the HoldCo level for LHR has been closer to c. 85%. As a result, the CAA would like to understand whether LHR might be generating returns in excess of regulatory settlement, solely due to higher gearing levels.

Scope of Work

- In the context of CAA considering whether a Gearing Sharing mechanism (ie. a mechanism to share financial returns in excess of regulatory settlement, solely due to higher gearing levels) might be appropriate for LHR, the CAA have commissioned EY to:
  - review Ofwat's "Putting the sector back in balance" publication, summarise key proposals therein (with a focus on the gearing sharing mechanism) and the market responses to Ofwat's proposal.
  - explore other regulatory frameworks, both in the UK and abroad, in respect of their approaches to gearing and the cost of capital.
  - consider LHR's current capital structure and historical levels of gearing along with the potential effects of a hypothetical Gearing Sharing mechanism on LHR.
  - develop a number of options/alternatives through which a gearing sharing mechanism could work for LHR, if CAA wee minded to consider this.

Limitations of our assessment

- Our scope of work does not include an assessment of the relative merits and/or demerits of Gearing Sharing mechanisms, nor is our work aimed to endorse or criticise the concept of Gearing Sharing. It seeks to provide an illustrative analytical tool for CAA to consider the mechanism in the context of LHR.
- The analysis herein uses the Q6 regulatory settlement numbers to carry out illustrative quantitative analysis to demonstrate the potential impact of a Gearing Sharing mechanism. This analysis is illustrative in nature and is aimed at understanding the scale of the impact that a gearing sharing mechanism may have.
- Whilst the gearing sharing options discussed in this report include potential changes to the Cost of Capital, we do not assume any adjustment to the risk allocation arrangement between HAL and the end users (customers).
- In theory, the options presented could be introduced on a temporary or a permanent basis. HAL may vary its gearing levels as a response to the changes. Our illustrative examples do not account for any potential response by HAL.
- The quantitative analysis conducted is illustrative in nature.

LHR 3rd Runway (R3) implications

- Our illustrative financial analysis has been undertaken based on the Q6 regulatory settlement numbers and does not take into account potential changes to the capital structure as a result of the R3 development.
- The R3 development requires a significant capital undertaking. The material change in the risk profile of HAL could require a change in capital structure and possible deleveraging. This aspect was considered in our Equity Financeability Report to the CAA dated 23/10/2017. Therefore:
  - Any outcomes as a result of implementing a gearing sharing mechanism may only be realised in the short-term.
  - CAA must also consider the potential impact of changes in regulation on R3 financeabilty. in giving due consideration to Gearing Sharing.

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Executive Summary

A brief summary of each section of our report is set out below:

Section 1: Review of Ofwat's 'back in balance' publications

- Ofwat is introducing a gearing sharing mechanism where water companies' actual gearing exceeds the notional level, on the basis that a higher gearing results in additional benefits to shareholders and places the customer at risk.
- Responses to the Ofwat proposal have been mixed. Certain water companies (with lower gearing) have been supportive. Companies with higher gearing and their investors have been critical of the proposal citing that (i) the proposal contravenes traditional corporate finance theory that the capital structure is irrelevant for the Cost of Capital (CoC), (ii) the stable return profile supports additional debt over and above notional gearing levels (iii) there is no credible evidence that customers have borne additional risks from higher gearing and (iv) a mechanism is already in place to share the benefit of a greater tax shield with customers.

Section 2: Other regulatory frameworks

- Ofwat's approach of targeting perceived benefits from greater gearing stands in contrast to Ofgem's approach which is broadly capital structure agnostic (provided the financeability of the business is not put at risk).
- In a few select examples we considered across Europe, setting a notional gearing level remains the most prevalent manner of setting the cost of capital. Significant differences in the assumed nominal gearing levels exist. There are however regulators who use the actual gearing level and actual cost of debt.

Section 3: LHR financial structure

- HAL's debt (Class A & B) is rated investment grade (A- & BBB). Ensuring that minimum rating covenants are not breached and HAL can maintain an investment grade rating (despite any changes to the allowed cost of capital) will be key to maintaining the financeability of HAL in light of R3.
- Our review of historical data finds a cost of debt broadly consistent with the assumptions of the Q6 regulatory settlement, with a gearing level (c.85%) in excess of the notional level (60%).

We have concluded in our previous report to the CAA dated 23/10/2017 that it is likely that HAL's gearing will reduce to maintain an investment grade credit rating for R3 financing.

Section 4: Options

- Financial Outperformance, as discussed in this report, in the context of a Gearing Sharing mechanism can occur due to one or all of the following:
  - Gains made by additional tax-shield resulting solely from actual leverage being higher than that considered in the regulatory settlement,
  - Gains made due to an outturn cost of debt being lower than that considered in the regulatory settlement, and
  - Higher equity returns realised solely from a higher level of leverage than the notional gearing considered in the regulatory settlement.
- A number of options (including a Gearing Sharing Mechanism) are available to a Regulator to address the issue of Financial Outperformance. This report does not purport to discuss all such options – rather the objective of this report is develop a limited number of the potential options of implementing Gearing Sharing mechanism, should CAA chose to do so, based on the Ofwat example.
- The potential options for implementing a Gearing Sharing mechanism for LHR have been developed using the following two regulatory levers:
  - Periodicity (ie. adjustments at the end of every year or after the control period)
  - Adjustments to the Passengers Charges by either offsetting the prior period Financial Outperformance or by adjusting the Cost of Capital
- Due to annual options being difficult to actually implement in practice, the options considered in this report are (Annual options, 1a, 2a and 3a have not been considered for any further development):
  - Option 1b: True-up – Adjustment to regulated passenger charge (offset of prior CP financial outperformance)
  - Option 2b. Adjustment to the cost of capital (control period reset)
  - Option 3b. True-up – Adjustment to regulated passenger charge (offset of prior CP financial outperformance) plus adjustment to the cost of capital (control period reset)

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A short summary of each option is provided below:

1. Option 1b: True-up – Adjustment to regulated passenger charge (offset of prior CP financial outperformance)

The mechanism is formulaic and therefore easy to operate. In this structure, HAL shares Financial Equity Outperformance, solely, as a result of higher gearing levels. This could encourage deleveraging and greater financial resilience. In this report, Ofwat's formula has been used to calculate the Financial Outperformance ie.

$Sharing\ rate\ x\ (Notional\ Cost\ of\ Equity - Actual\ Cost\ of\ Debt)\ x\ (Actual\ Gearing - Reference\ Gearing)$, where Reference Gearing will be the gearing assumed at the previous regulatory settlement.

The disadvantage with a True-up is that the change might encourage a sub-optimal capital structure and be negatively received by investors (i.e., inconsistent with regulatory precedent, retrospective nature, etc.)

2. Option 2b: Adjustment to the cost of capital (control period reset)

A potential approach to account for the incremental benefit of additional gearing is to reset the cost of capital. In this option, a revised CoC is calculated using the outturn gearing level (instead of using the notional gearing level), actual cost of debt and implied cost of equity (based on a notional unlevered return on equity), all from the previous Control Period (CP).

This mechanism fits into the existing regulatory framework, except for a charge that HAL's cost of capital reflects its actual gearing. This option does not explicitly encourage deleveraging although that is likely to be an indirect consequence of this mechanism.

3. Option 3b: True-up – Adjustment to regulated passenger charge (offset of prior CP financial outperformance) and Adjustment to the cost of capital (Control Period reset)

This option is essentially the amalgamation of the mechanics of the above two options, in effect (i) adjusting the passenger charges by offsetting the Financial Outperformance realised in the previous Control Period, driven by the difference in the Gearing assumed in the previous regulatory settlement and the outturn actual gearing, (ii) adjusting the passenger charges by resetting the Cost of Capital for the next period, based on actual outturn gearing in the previous control period. On the basis of illustrative calculations, this option will result in larger impact to HAL's revenue (relative to the other two options discussed above).

Periodicity

HAL's existing regulatory framework operates over 5 year settlement periods. Keeping the adjustment in line with the 5 year window reduces the administrative burden. Alternatively, annual adjustments are possible where a formulaic approach can be pre-agreed. The adjustment would benefit from being more real-time. However, the annual options have not been discussed in any further details in this report.

- Based on the illustrative analysis carried out, methods 1 & 2 reduces HAL's passenger charges and in turn its adjusted EBITDA by c. 3-5% per illustrative calculations. In contrast, for method 3 the decrease in adjusted EBITDA is c9% as per the illustrative analysis.
- The CAA needs to consider whether any change will be perceived by investors as a "regulatory" policy change/intervention in the UK and hence it should consider the consequences in greater depth. Further, as set out earlier, our report excludes any potential implications to LHR capital structure arising from R3 financing. As a result, our analysis should be considered highly illustrative, with a view to illustrate impact of the Ofwat mechanism on LHR in a very narrow context.

  In making its decision on whether to implement any mechanism similar to Gearing Sharing, CAA should appropriately consider any impact on R3 financeability.

1

Review of Ofwat's 'back in balance' publications

1 Review of Ofwat's 'back in balance' publications

Key objectives of the consultation, feedback and proposals 1 & 2

Key objectives of the consultation and proposals

- According to Ofwat:
  - The consultation (initiated in April 2018) was driven primarily by concerns around behaviour of water companies, which it saw as eroding trust in the industry.
  - The industry has seen an increasing trend of high levels of dividend payments and performance-related payments, as well as potentially risky financial structures.
  - The proposals are aimed at ensuring the industry is delivering the best outcomes for consumers through:
    - encouraging individual utilities to take account of customer interests
    - improving incentives for utilities to be more transparent in demonstrating that their dividend policy and performance-related executive pay takes account of customer delivery
    - assessments of financial resilience and improvements as needed, lowering risk to consumers
  - the proposals do not aim to set dividend policy, capital structure or executive pay, and aims to provide flexibility to utilities to select a preferred approach that meets Ofwat's objectives.

Feedback on the consultation process

- Water companies and other stakeholders commented on many aspects of Ofwat's proposals.
- Some of these responses are summarised on the right and overleaf.

Proposal 1: Dividend policy (not being considered in this report)

Ofwat proposal

- Companies have to set out their dividend yield in their annual reports, demonstrating that the level of dividends is justified relative to customer delivery in the year.
- A base nominal dividend yield of 5% is suggested as a reasonable benchmark with which to compare. Ofwat state that this is not a control nor cap on dividends, but simply a comparison tool to measure the level of dividends.

Market response

- 26 out of 32 respondents to Ofwat's consultation were supportive of Ofwat's proposals. However, there were concerns regarding:
  1. a regulatory intervention to control dividends may reduce the industry's attractiveness for long-term investors .
  2. a regulatory intervention to control dividends, over and above Company Law, which already sets out specific requirements with which companies must comply may be considered onerous by the long-term investors.
  3. Dividend policy has to be seen in the wider context of the business

Proposal 2: Performance-related executive pay (not being considered in this report)

Ofwat proposal

- Companies must demonstrate that there is a substantial link between executive-pay and stretching performance delivery, by reference to the business plan, as opposed to a singular link to financial performance.

Market response

- There were concerns by some respondents that there would be unintended consequences such as an increase in base pay to offset any reduction in performance-related pay.

1 Review of Ofwat's 'back in balance' publications

Proposal 3 and response

Proposal 3: Gearing sharing mechanism (being considered for this report)

Ofwat proposal

- Ofwat's view is that no benefit is currently being passed to customers from high gearing, although customers implicitly accepted higher risks (such as the risk of financial failure and an inability to adapt to regulatory requirements).
- For Ofwat, this implies that:
  - Equity holders earn 'super-normal' returns that are disproportionate to an appropriate risk arising from higher gearing.
  - Higher gearing implies a lower WACC, whilst water companies are paid charges based on a higher WACC derived from a notional capital structure with lower gearing. The financial benefit accrues to shareholders at the expense of customers.
- Ofwat's intention is to share benefits with customers where gearing is significantly higher than the notional level. Ofwat's stated intention is not to influence changes to each company's capital structure.
  - The company remains best placed to determine the financial structure and therefore no gearing cap or change to notional gearing percentage is being proposed.
- Ofwat have proposed a formula to calculate the share of customer as follows: Gearing difference[1] x financial outperformance difference[2] x sharing rate[3]
  - This will only apply for companies with a gearing >10% higher than notional gearing level (i.e., applies from 70%) This percentage was increased by 5% as a result of consultation process.
  - Companies are given the flexibility to propose an alternate mechanism.
  - Quantitative analysis by Ofwat suggests that £200mn-£350mn of benefits can be transferred to customers through this mechanism against total revenue across the industry of £5.8bn (2015).

[1] Gearing difference = actual gearing – 65% [Reference point]

[2] Financial outperformance difference = notional cost of equity (Re) – actual cost of debt (Rd)

Response to Ofwat consultation[4]

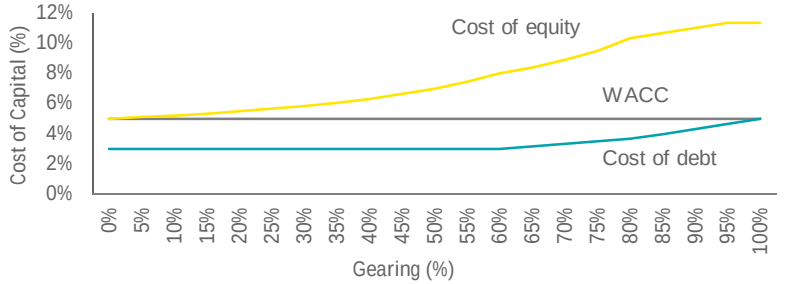
We have reviewed market commentary regarding the proposal; the documentation reviewed comprises of the following publications:

- A report by KPMG commissioned by a consortium of private investors (or owners of water utilities) in response to the Ofwat consultation, published on 17 May 2018,
- A sample of consultation responses from water companies with higher gearing (Thames Water, South East Water & Yorkshire Water), some with lower gearing (South West Water, United Utilities and Wessex Water) and six from water company investors; and,
- Varied market commentary

We summarise the key arguments made in the responses below.

Benefits gained by higher leverage are in accordance to traditional finance theory

- Modigliani-Miller's (MM) Capital Structure Irrelevance Proposition asserts that in the absence of taxes and bankruptcy costs, a company's WACC is determined by the underlying risk of the business. And further, under the assumptions made by MM, an increase in debt results in greater risk to equity holders, thus increasing the cost of equity.



[3] Sharing rate = 50%

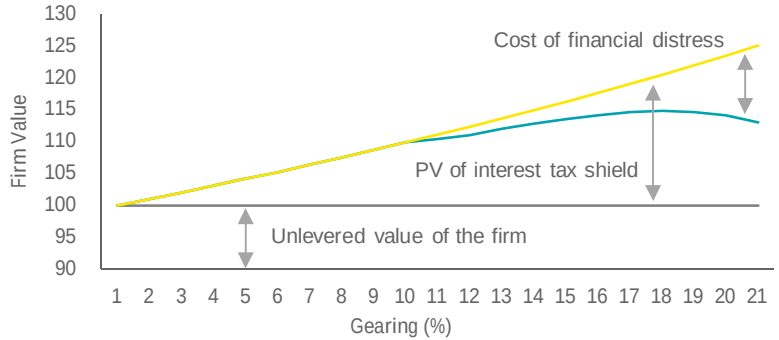
[4] Ofwat consultation responses from Utilities and KPMG: Commentary on the Ofwat consultation Putting the sector back in balance

1 Review of Ofwat's 'back in balance' publications
Proposal 3 and response (cont'd)

Response to Ofwat consultation (cont'd)

- Several responses assert that Ofwat's proposal would be a significant departure from regulatory precedent since, in their view, all UK regulators to date recognise the MM principle.

Tax shield and costs of financial distress



- Consultation responses also stated that increased leverage lowers the WACC through interest deductible payments and that Ofwat already has a mechanism in place for sharing the increased tax deductions (tax shield) where water companies are leveraged above the notional gearing level.
- South East Water and Yorkshire Water assert that the gearing sharing mechanism could incentivise companies to de-lever, lowering the tax shield benefit be passed to customers.

[1] Modigliani-Miller capital structure theory (with taxes) assumes transactional cost of buying and selling securities as well as bankruptcy costs of nil. The trade-off theory, an extension to MM, considers the cost of financial distress associated with greater debt (Kraus and Litzenberger 1973).

- Ofwat's 'back in balance' publication states that high levels of gearing decreases financial resilience, potentially imposing the costs of financial distress on customers. Some consultation respondents commented on this issue:
  - United Utilities suggests that enhanced gearing results in additional income for investors, with little benefit to customers. Further higher gearing increases susceptibility to shocks. Similarly, Wessex Water states that elevated gearing is not in the interest of customers and may be 'too high' at some companies.
  - A joint Ofgem & Ofwat paper (2006) clarifies that financial distress costs due to decisions on financial structure should be borne by capital providers[2].
  - KPMG's research suggests that higher gearing to date has not correlated to poorer operational performance or reduced investment.

Observed gearing in the market

- Consultation responses include market evidence that gearing structures of 70-80%+ are sustainable in infrastructure segments with stable cash-flows and limited demand-side risk.

Commentary regarding the regulatory regime

- Consultation responses from water investors and highly geared water companies also critique the proposal in regards to the following :
  1. Unjustified - no demonstrated market failure by Ofwat to redress
  2. Retrospective – negatively impacts companies for their historic financing decisions
  3. Asymmetric – penalises companies for leverage above the notional level with no benefit to companies with gearing lower that the notional gearing
  4. Perfunctory consultation period of three weeks - insufficient for such a fundamental change to the regulatory regime

[2] Ofwat & Ofgem – 'Financing Networks: A discussion paper'

1 Review of Ofwat's 'back in balance' publications
Proposal 3 and response (cont'd)

Response to Ofwat consultation (cont'd)

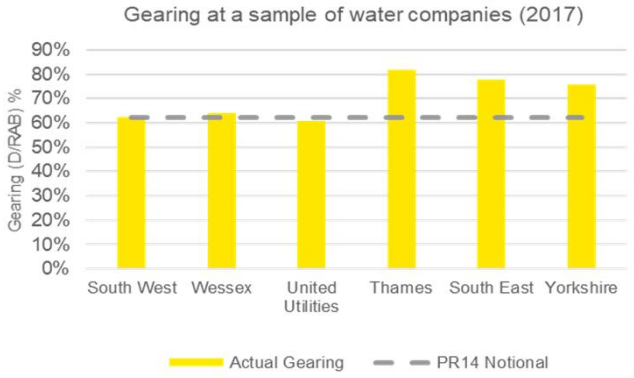
- Investors cite the UK's open, consultative and stable regulatory regime to date as drivers of investment in the water sector. The gearing sharing proposal is cited as being a significant departure from the status quo where capital structure decisions are the preserve of the board.
- The consultation responses of two Canadian pension funds noted, in regards to the proposal's effect on the attractiveness of the UK's water sector:
  1. OMERS (c. 32% in Thames Water): 'it risks the investability of the sector'
  2. BCI (c. 9% in Thames Water): 'the sharing of financing outperformance could undermine our ability to continue with our investment in the UK water sector'.
- A recent FT article discusses the UK's 'negative and hostile political and regulatory environment' for infrastructure. The article cites the difficulties encountered by Yorkshire Water's owners in selling their stakes in conjunction with Ofwat's 'tough new regime.'[1]
- In terms of credit rating impacts, the gearing sharing mechanism in conjunction with a tougher regulatory stance by Ofwat appears to drive Moody's negative outlook for the water sector (see 22 May 2018 announcement[2]):

  'We see moves by Ofwat to discourage gearing above the regulator's notional capital structure and the proposed further oversight of equity distributions as departures from long-standing regulatory practice', says Stefanie Voelz, a VP-Senior Credit Officer at Moody's.

  'We also see heightened risk of future political interference in the design of the regulatory framework and are changing our assessment of the stability and predictability of the UK water regulatory regime under our methodology to Aa from Aaa. To reflect the increasing business risk we have also tightened our generic ratio guidance for the sector,' continues Ms Voelz.
- In short, it appears the proposal (and its manner of implementation) is having impacts on the perception of regulatory risk and the appeal of UK water assets.

Commentary by water companies

- We have reviewed the consultation responses of a representative sample of six water companies (i.e. 3 with lower gearing and 3 with higher gearing) shown below.
- The proposal is critiqued by water companies with higher leverage (e.g., Thames Water, South East Water & Yorkshire Water).
- The response amongst companies with lower gearing levels is more varied. United Utilities and Wessex Water are broadly supportive of the proposal but stress the need to increase the reference point in the gearing sharing formula to 68% and 70% respectively
- South West Water is supportive of sharing 100% of gains (that "sit outside of the regulatory framework") made by companies with the customers. It stresses that the proposed mechanism may incentivise the wrong behaviour (ie. incentivise shareholders either to retain a higher level of gearing or perversely incentivise lower geared company to increase gearing.



[1] FT – Infrastructure investors put 'blanket ban' on UK assets (2019)

[2] Moody's changes outlook to negative on ratings of 4 UK water groups (22 May 2018)

1 Review of Ofwat's 'back in balance' publications

Responses continued & key takeaways for CAA

Response to Ofwat consultation (cont'd)

Other relevant points of commentary:

- Respondents who are against the proposal cite that the lenders and financing agreements impose strict discipline on management teams, making leveraged companies more efficient to the benefit of shareholders.
- Examples of potential perverse incentives are stressed by respondents in both camps; examples of these are included below:

1. Achieving a higher actual cost of debt to reduce the spread between the cost of debt and equity
2. Scenarios where debt is paid down in favour of higher pension deficits to escape the definition of debt, etc.

Other Ofwat proposals

Along with its proposals for dividend policy, executive pay and gearing sharing proposals, Ofwat considered a range of other proposals which could impact the capital structure and cost of capital. These included:

- Cost of debt sharing mechanism: companies can propose a voluntary mechanism to share the benefits of the actual cost of embedded debt versus the notional cost of debt. New debt will be index linked to reduce market pricing risk.
- Changes to the Initial Assessment of Business Plans: include additional wording to specify the need for directors to demonstrate attempts to take into account a fair balance between customers and investors (including outperformance sharing, dividend policies and any performance related element of executive pay).
- Financial resilience tests: companies are required to perform a minimum suite of scenarios set out by Ofwat, as well as any additional, company specific scenarios to improve the current significant inconsistencies in the level of detail provided by companies. This may impact the sustainable levels of gearing.

- The mechanism proposed by Ofwat is seen by some respondents to Ofwat's consultation as penal in nature to companies with high-levels of leverage because the spread between the notional cost of equity and actual cost of debt is expected to be positive and relatively large.
  - There is a risk, it may result in deleveraging among companies potentially leading to a sub-optimal capital structure.
- Ofwat has provisions for targeting the increased debt tax shield as a result of an increased gearing, however, CAA's Q6 settlement does not currently contain provisions to capture the increased tax shield arising from higher gearing than the notional gearing assumption.
- Ofwat's proposed gearing sharing mechanism seeks to partially reduce the risk of financial distress (associated with higher leverage). This may have some relevance for LHR as:
  - Should CAA pursue a Gearing Sharing mechanism, further work could consider the likelihood of financial distress at various gearing levels along with expected costs in the event financial distress imposed on passengers/taxpayers. We recognise that assessing the likelihood of financial distress at HAL specifically is difficult. An option could be to use the credit ratings on HAL's most junior bonds to inform the probability of distress. As an example, S&P assesses a c.0.5% probability of default on infrastructure debt rated BB. [1]
  - Furthermore, LHR is an asset of national importance. Thus it is very likely that interventions would be necessary to keep LHR operational in the event of HAL insolvency.

[1] S&P Global – 25 Years of Rated Infrastructure Corporates and Project Finance (2018)

1 Review of Ofwat's 'back in balance' publications

Other proposals & R3 considerations

- Should CAA decide to implement any Gearing Sharing mechanism, the mechanism, implementation and communication of any changes to the CAA's determination of HAL's regulatory cost of capital should be carefully considered.
  - Ofwat's formula is considered penal by several investors in the water sector, though it has the support of certain companies. In contrast to Ofwat, CAA's price control framework affects only HAL. This allows the CAA to implement a mechanism which is bespoke to HAL
  - As discussed in Section 3 of the report, HAL's average debt maturity is 12 years and its equity investors have long investment horizons. The perception of regulatory risk is enhanced where regulatory changes are sudden (i.e., deviate too far from the ex-ante expectations of investors) or worse yet, where changes are retrospective. So, CAA needs to consider a phased implementation of any major changes.
  - Ofwat was criticised for not having evidence of the perceived market failure which it was attempting to redress. The CAA should, if possible, explain the market failure it is seeking to address and clearly explain how its proposals would address that failure.

  An in-depth consideration of these factors is outside the scope of this report.

Runway 3 impacts

Background

- The construction of a new runway at Heathrow Airport ('Runway 3'/'R3') will require significant capital investment (i.e., c. £25bn over c. 8 years), thus increasing the RAB by c. 150% and boosting aircraft movement by c.50%.
- R3 will therefore magnify any changes implemented in respect of gearing sharing due to (i) higher passenger volumes and (ii) a higher RAB. Hence, setting an appropriate cost of capital becomes even more critical.

R3 financeability

- Any short-term benefits in the form of reduced passenger charges should be balanced with R3's financeability given the need for significant capital investment.
- R3 will introduce a level of development risk and demand risk (due to the scale of new capacity). The increased risk may translate into a higher cost of capital. The mechanism introduced should not preclude capital providers from earning a sufficient return that is commensurate with the risk of R3.
- The willingness of existing shareholders to continue investing in HAL amidst a changing risk profile is unclear, though shareholders have expressed a high degree of commitment. To ensure R3 financeability, HAL should continue to be perceived as an attractive and investable asset. As with debt, this will depend on both expected cash flows over the next regulatory period and beyond, which are directly influenced by investors' views on HAL's regulatory regime.
- A large part of R3 will be financed through debt issuance which is expected to test the debt markets, even with an investment grade rating. In putting forth any proposal, CAA should be cognisant of the potential impact of such a proposal on HAL's ability to raise investment grade debt.

  Key considerations in maintaining an investment grade credit rating are as follows:

  1. Whether any changes in expected cash flows arising from the Gearing Sharing mechanism could affect key debt ratios; and,
  2. Rating agencies' perception on the stability of HAL's regulatory environment.
- Notwithstanding the gearing sharing, deleveraging may be required to maintain the investment grade credit rating as R3 is developed. This deleveraging may limit the impact of any regulatory gearing sharing mechanism.
- Deleveraging in conjunction with R3 development could be encouraged through other regulatory changes. For instance, HAL could be allowed to earn a return on incurred CAPEX that has not been completed, which could encourage profits to be retained to finance a greater share of R3.

An in-depth consideration of R3 impacts is outside the scope of this report.

2

Other regulatory frameworks

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2 Other regulatory frameworks
Introduction

Introduction

- In the context of CAA potentially adopting a Gearing Sharing mechanism for LHR, we have explored a number of other regulatory frameworks, both in the UK and abroad, in respect of their approaches to gearing and the cost of capital.
- We have explored whether other regulators have similar mechanisms to deal with higher gearing, including sharing mechanisms, gearing caps, or financeability requirements. We look at:
  - GB energy networks (Ofgem)
  - Other European energy regulators, with short case studies on Germany and Belgium
  - Australian regulators, both energy and water
  - The gearing cap CAA implemented for NERL
  - The Thames Tideway Tunnel
- We have set out brief thoughts on how each of these might be applicable to CAA in its regulation of LHR

2 Other regulatory frameworks
Ofgem regulation

Ofgem

- Ofgem is currently undergoing a price control review (RIIO2). In contrast to Ofwat, Ofgem's price control does not focus on balance sheet regulation and does not proscribe a specific capital structure.
- Ofgem has proposed to set a baseline allowed return in RIIO-2 to ensure that an efficient notionally geared company is able to finance its regulated activities through debt and equity:
  - Ofgem determines the level of risk to arrive at the notional capital structure of an efficient company.
  - Ofgem opines that it is for network companies to choose their capital structure and investors to bear the risks associated with that choice.
- Rather than set a specific sharing mechanism, Ofgem has proposed to focus on the impacts of companies increasing their gearing above the notional level, including the risk of companies gaining higher returns, gaining tax benefits, and risks to financeability. Ofgem have proposed a number of controls in these areas, as described below.

Risk of high returns

- Return Adjustment Mechanisms (RAMs) are "failsafe mechanisms" that have been proposed to limit the returns that energy networks can earn above the base allowed cost of equity. While this is not the same as a gearing sharing mechanism, it implicitly may achieve a similar outcome as a company which is outperforming because of higher gearing may end up having to return some of that to customers.
- Ofgem do not intend to apply any discretionary adjustments but there are several options being considered for mechanistic RAMs. One of those is a sharing factor for Return on Regulatory Equity (RoRE) which would reduce returns the further they deviate from the baseline cost of equity. Another option is to use "anchoring" which would adjust all companies' returns when the sector average return breaches a certain threshold.
- Ofgem has proposed that the RoRE sharing factor approach be applied to gas and electricity transmission sectors (where competition between companies is more limited) while anchoring returns be applied to gas distribution.
- RAMs would be symmetrical and therefore result in payments to or from consumers. They may be applied at the end of the price control or through annual adjustments.
- Ofgem are also consulting on redefining RoRE to take into account financing outperformance or underperformance, ie including the impact of additional returns of losses from the indexed cost of debt and tax allowances. Therefore higher gearing could impact RoRE through a higher cost of debt and lower tax. This may incentivise companies to maintain a capital structure close to the notional level.
- Ofgem also propose to introduce a number of uncertainty mechanisms to reduce the risk that companies can earn high returns. For example, they propose that cost of debt indexation will be retained, and cost of equity will be indexed for RIIO-2 (the favoured proposal is to index the real risk free rate leaving the beta and total market return constant).

Risk of overfunding tax

- The price control includes a mechanism for clawing back any corporation tax reductions from having more debt than the notional level.
- This prevents companies geared above the notional rate from gaining a tax advantage.

2 Other regulatory frameworks
Ofgem regulation (cont.)

Risks to financeability

- For RIIO-2 Ofgem have put in place more stringent financeability checks, While this is not directly comparable to a gearing sharing mechanism, as in most cases consumers will not receive any payments, the checks will limit the ability for companies to benefit from higher gearing. They may also reduce the need for a sharing mechanism, as both the ability and incentive for companies to gear above their notional level has been reduced.
- Ofgem have proposed that companies will need to conduct financeability testing on their actual balance sheet (not just the notional balance sheet) and provide Board assurance that they are financeable. Companies which gear above the notional level will have to explain how they can remain financeable.
- Ofgem are consulting on whether to include a 'cashflow floor' as a further financeability mechanism. This would pay network operators a Cashflow Top Up (CTU) payment to support debt repayment, in cases where cashflow is inadequate. The company would then pay back the CTU by paying 75% of operating surpluses to the system operator until fully repaid.
  - Ofgem have proposed that a **gearing cap** would apply when the cashflow floor is hit to prevent abuse. In other words, companies would be forced to maintain gearing below the cap when they are receiving top up payments. The cap would be set as notional gearing plus some amount of headroom.
  - They have also proposed a **gearing penalty** would apply when the cashflow floor is hit, with any CTU payments being escalated by WACC. An increased penalty would apply for gearing above 5% over the notional level. Ofgem have suggested an additional 1% of penalty for every additional 5% of gearing. This would provide a strong incentive to maintain gearing at the notional level when receiving top up payments.
  - Network licences contain 'ring-fence' provisions which help to ensure the financeability of the network companies, for example by limiting the indebtedness of the company to permitted regulatory purposes, and to require companies to maintain investment grade credit ratings. These provisions are likely to help protect consumers implicitly from high gearing, as there will be an effective cap on gearing in order to maintain an investment grade credit rating.
- Ofgem think the introduction of a cashflow floor would also help to strengthen the financial ring fence, for example by requiring more regular reporting of liquidity positions and greater regulatory oversight if a company ever requires financial support from the cashflow floor.
- An alternative financeability mechanism being considered is to force companies to de-gear if necessary, though Ofgem have not published details of how this might work in practice.
- There is also an increased focus on corporate governance in Ofgem's consultation, including a proposal to increase the number of independent NEDs on Boards and increasing financial reporting and transparency.

Conclusion

- Ofgem does not implement a gearing sharing mechanism, though some of its proposals implicitly deal with the issues which could arise from companies gearing above the notional level, eg tax clawback, while other measures disincentivise high gearing, eg the requirement to maintain investment grade credit ratings and get board approval that the company will be financeable.
- However, other proposals may create more complex interactions with the level of gearing chosen by companies. The introduction of Return Adjustment Mechanisms may mean companies share their financial outperformance with consumers, but as some rewards are competitive and performance is judged relative to peers, it may also incentivise companies to prioritise financial outperformance over operational outperformance. Similarly it could be argued the cashflow floor could incentivise higher gearing as it protects shareholders from bankruptcy and therefore the overall impact of Ofgem's proposals is not clear.
- Elements of Ofgem's proposals, including more robust financeability checks and Return Adjustment Mechanisms could be considered by HAL as a replacement for, or in addition to, a gearing sharing mechanism.

2 Other regulatory frameworks

European energy regulation

Our analysis is based on a review of regulatory publications, primarily covering gas transmission system operators (TSOs)

European approaches to the cost of capital

- The dominant approach across Europe uses the regulatory asset base (RAB) as its foundation, but there are significant variances in gearing. There are two basic approaches:
  1. Use of actual gearing, eg Greece appear to consider historical gearing in conjunction with forecasted business plans, while Denmark uses actual gearing.
  2. Use of a notional structure – this is the predominant approach in Europe. Countries may use peer groups to benchmark the level of gearing, which appears to be the preferred approach in the Czech Republic, Netherlands, Slovakia, Hungary and Sweden. Alternatively regulators may base gearing on a theoretically efficient firm. There are however significant differences in the notional capital structures assumed by regulators (see Appendix C).

Germany

- BNetzA, the German energy regulator treats the cost of debt and the cost of equity separately in determining allowed revenue.
- It is up to individual regulated companies to decide their capital structure, but there are two separate returns on equity, based on a notional gearing of 60%, with the first 40% of equity given an allowed return based on the CAPM model, and any further equity given a lower return, based on a mix of debt securities yields. This could act as an incentive for certain capital structures.
- Debt repayment is treated as a cost and passed through to consumers at a notional rate, set ex-ante.
- Controllable totex (which includes interest payments) is subject to an efficiency score, which is determined relative to other providers. Providers with the same outputs but different controllable totex will receive different allowed revenues, with the lowest cost provider receiving 100% (and potentially a further bonus of up to 5%) and other providers receiving proportionally less than 100% based on the difference in their costs.
- This methodology removes difficulties in estimating the cost of debt and provides incentives to raise efficient financing (through an efficiency score).

Belgium

- CREG, the Belgian regulator, uses a similar methodology to Germany, but setting a fixed notional gearing level of 67% meaning 33% of equity is remunerated at the cost of equity and any equity above this is remunerated at a lower rate. Real debt costs are passed through directly and it is up to the regulated company to determine its capital structure.
- VREG, the distribution system operator (DSO) regulator for Flanders, does conduct financeability checks, based on a requirement for companies to maintain an 'A' credit rating with Moody's, which effectively requires gearing to be lower than 70%. If companies are found to breach these tests, the regulator is able to discuss actions with the DSO to reduce gearing.
- The CREG methodology simplifies estimating the cost of debt but could blunt incentives for efficient financing (in the absence of an efficiency score). The VREG credit rating requirement protects the financeability of the business.

Conclusion

- The predominant method of setting gearing in Europe is a notional structure, however some regulators have explicit financebility checks (see Appendix C) which would seek to remove an incentive to gear above the notional level.
- The examples of Germany and Belgium suggest regulators in Europe are happy to let companies decide their capital structure, and there are fewer controls than in GB around the rate of return, eg in Germany the cost of debt is passed through at a notional rate. Some mechanisms, such as the dual return on cost of equity incentivise gearing at least at the notional level.
- However, this may be changing, for example the Spanish regulator CNMC has recently concluded a consultation to limit indebtedness using a variety of metrics, including a 70% gearing ratio. In other countries including Belgium, the need to maintain a specific credit rating will also force companies not to gear too highly.
- LHR's gearing of 85% is above the notional level assumed by most regulators in Europe (see Appendix C)

Sources:

Council of European Energy Regulators – CEER Report on Investment Conditions in European Countries

EY- Mapping power and utilities regulation in Europe

ACER's Methodologies and parameters used to determine the allowed or target revenue of gas transmission system operators (TSOs)

Florence School of Regulation – Incentives for investments: Comparing EU electricity TSO regulatory regimes

Brattle Group's The Cost of Capital for DSOs - Review of VREG's Methodology

Inframation NewsL Regulated Utility Returns Across Europe, March 2019

2 Other regulatory frameworks

Australian regulation

Australian Energy

- Similar to Ofgem's approach, a notional gearing level is used in order to reflect an optimal company. This protects consumers from being exposed to the actual gearing decisions of a company.
- The notional gearing ratio is set at 60% (and has been as far back as 2002). AER's discussion paper on gearing found that actual gearing levels are very close to the notional level on average, which suggests there is not a pressing need to put in further controls.
- In addition to considering the overall level of gearing AER's review also looked at the calculation of gearing (whether to base on market value, book value, or RAB), whether to use gross or net debt, and which comparator businesses to use. They concluded:
  - 60% remains an appropriate gearing level;
  - Market based estimates are the most appropriate measure of gearing;
  - To continue using a comparator set which may include companies with unregulated activities.
- Financeability metrics were considered to test whether a company can reach a benchmark credit rating, however AER decided not to use these assessments to inform the rate of return, arguing that companies will face financial pressure to maintain a good credit rating. Their analysis showed that 'the WACC is relatively invariant to changes in gearing'.
- It is left to companies to perform their own financeability tests, eg to help determine an optimal capital structure.

Australian Water

- IPART, the regulator for NSW, do have financeability metrics which they measure against, including one that considers the actual gearing level and has a standard benchmark of 70%, although it is weighted lower than other metrics such as the Real Interest Coverage Ratio.
- If a company does not pass the financeability test then the regulator may take action. For example, the test allowed IPART to show that Essential Water's actual gearing was substantially higher than their notional level (55 per cent), and that it would not be financially sustainable over the regulatory period unless it adopted a lower gearing level.
- However it does not appear that any specific regulatory action was taken and instead IPART simply recommended 'that Essential Water's management and shareholders consider this issue.'
- IPART's framework provides it with other actions where a utility's higher gearing may be impacting its financeability (and thereby imposing economic costs on customers). It may consider NPV-neutral adjustments to prices to address temporary cash flow problems where these are not due to imprudent or inefficient investment decision. Where the issue is due to inefficient business decisions IPART would discuss with the business the need to inject more equity, accept a lower rate of return on equity, or both, with the exact outcome depending on the circumstances

Conclusion

- AER's conclusion may not be applicable to HAL as actual gearing levels of Australian energy networks were found to approximate the notional gearing level. Conversely, HAL has persistently exceeded its notional gearing level which results in a greater tax shield and an increased risk of financial distress.
- The lessons from IPART, in particular relating to Essential Water suggest it would be sensible for CAA to consider the regulatory levers it has in place to require de-gearing. While this would not be directly equivalent to a sharing mechanism, it could be used to protect consumers and the threat of regulatory action may act as a sufficient incentive to reduce gearing.

Sources:

AER's Rate of return instrument Explanatory Statement, December 2018

AER's RoR Guideline Review - Gearing (Discussion paper), February 2018

IPART's 'Review of our financeability test', November 2018

Essential Energy's water and sewerage services in Broken Hill – Review of prices from 1 July 2014 to 30 June 2018 – Final Report, June 2014

2 Other regulatory frameworks

Other relevant examples

National Air Traffic Services (En Route) Plc (NERL)

- CAA implemented a gearing cap for NERL of 65% (compared to a notional gearing of 60%) in 2012.
- The gearing cap is a financeability control to reduce the chance of NERL being unable to finance its debt obligations.
- This is not a prohibition on gearing exceeding the cap as it allows NERL to temporarily increase gearing to ride out financial difficulties. However when above 65% NERL is required to provide a plan for de-gearing and unable to distribute dividends.
- NERL has argued that a gearing cap reduces their ability to finance their licence activities and reduces their operating flexibility, though their actual gearing has consistently been below the notional level.
- CAA have also put in place a clawback mechanism to remove any tax benefit from gearing above the notional level of 60%.
- The model was deemed to have worked well for NERL given that NERL's financial robustness was a key objective.

Conclusion

- The ability to efficiently finance HAL is a larger consideration than for NERL given the relative disparities in RABs, £16Bn and £1Bn in 2017 respectively. A gearing cap could preclude HAL from achieving its optimal capital structure, which may vary depending on market conditions and the risk characteristics of HAL (i.e., pre versus post R3). For this reason, we have not considered the possibility of a gearing cap for the purposes of this analysis.

Thames Tideway Tunnel

- The cost of capital for the construction of the Thames Tideway Tunnel (TTT) was determined through a competitive tendering process, with a bid WACC (real, post-tax) of 2.497% (note a separate price control will be set from 2030 when it is operational).
- This does not imply a specific cost of equity, cost of debt or notional gearing level. Ofwat state in relation to the project that "We do not, as a long held policy, prescribe or endorse specific capital structures," however the infrastructure provider will have a licence obligation to maintain an investment grade credit rating, which in practice may limit their gearing.
- There are 'cash lock-up' provisions in the case that an investment grade credit rating is not maintained, which prevent the infrastructure provider from transferring any sum or asset rights.
- The regime also includes several adjustment mechanisms to the bid WACC, including a debt adjustment factor, which allows the WACC to increase or decrease if a cost of debt index differs from a base reference point by more than 0.5%, which could help to mitigate any financeability concerns.
- TTT also has a Government Support Package (GSP) which provides contingent financial support for extraordinary project risks, including certain insurance risks, cost overruns, disruption in the debt market, discontinuation of the scheme, and insolvency. The GSP expires on completion of the project.

Conclusion

- TTT is differentiated from other examples as its aim was to enable the project to access enough debt to finance it, rather than trying to encourage the project to de-gear.
- Unless the purchase of HAL's equity is opened up to a competitive tendering process (e.g., as part of raising additional R3 financing), this methodology for setting the WACC cannot be applied by CAA. We note however that the possibility of having debt indexation is being considered by CAA for LHR.

Sources:

Civil Aviation Authority report - Estimating the cost of capital for NERL, prepared by PWC

Ofwat guidance on approach to the economic regulation of the Infrastructure Provider for the Thames Tideway Tunnel

Ofwat Project Licence for Bazalgette Tunnel Limited

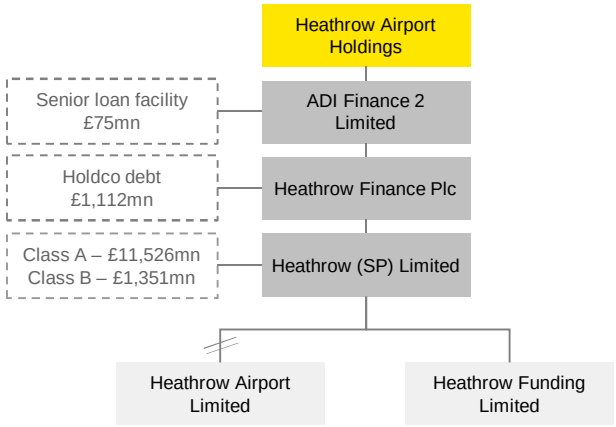
3

LHR financial structure

3 LHR financial structure

HAL current capital structure

Summary debt position as at 30 September 2018[1]



Summary operational and financial covenants and lock-ups[2]

Regulatory Asset Ratio (Net Debt/RAB)		
	Actual[3]	Covenant
Class A Trigger	70.8%	70.0%/72.5%
Class B Trigger	79.1%	82.0%/85.0%
HoldCo covenant	85.8%	90.0%/92.5%
Interest Cover Ratios		
	Actual[4]	Covenant
Class A Trigger	3.78x	1.40x
Class B Trigger	2.97x	1.20x
HoldCo covenant	2.65x	1.00x
Other protections		
	Actual	Covenant
Minimum liquidity of future interest payments		>12 months
Minimum Class A/B credit rating	A-/BBB	BBB+/BBB-
Debt maturities		
– In any two year period		<30% RAB
– In any five year period		<50% RAB
Minimum interest rate hedging		
– Current regulatory period		>75% RAB
– Next regulatory period		>50% RAB

Heathrow group debt structure

- Historically HAL has been able to fund its capital expenditure programme through additional debt and operating cash flows. This has led to current gearing levels of c.85% of RAB, which is above the CAA notional gearing level of c.60%.
- The debt is materially issued in three formats across two entities within the broader group (ADI Finance 2 Ltd debt is not material).
  - Heathrow (SP) Limited – corporate securitisation structure issued two classes of ring fenced secured debt: Class A debt c.£11.5n and Class B debt of c.£1.4bn.
  - Heathrow Finance Plc – HoldCo debt c.£1.1bn. This debt is structurally subordinated to the Class A and Class B debt. This debt is serviced through a back to back loan to Heathrow (SP) Limited.
- The key characteristics of the debt raised by Heathrow:
  - All Class A and Class B is bound by common terms.
  - All debt (Class A, Class B and Heathrow Finance debt) is bound by covenants, security over assets and limitations on distributions. We note for the avoidance of doubt that the Heathrow Finance debt is supported through an unsecured payable in Heathrow (SP) Limited to Heathrow Finance Plc.
  - Average maturity of existing debt is c.12 years. Historically, HAL has accessed both the medium- and long-term debt markets with maturities ranging between 5 to 40 years at issuance.
  - Issuance in 6 currencies across public and private markets, to maximize coverage across a wide range of investors.
  - Diversified debt maturities: c.12% maximum maturity in any single year.

Support for current debt levels

- HAL's ability to maintain gearing levels above the notional CAA amount is supported by the following factors:
  - Track record of strong operating performance maintains healthy debt servicing capacity
  - Ability to add new capital expenditure to the RAB, which is supported by an increase in regulated revenues (and hence, an improvement in debt service capacity)
  - A function of the two points above results in HAL maintaining an investment grade credit rating and developing an established debt raising platform that allows access to low-priced debt.

[1] Investor Report December 2018

[2] Financing Heathrow expansion, building from strength as largest wholly-privately finance airport globally (Working Draft), Heathrow Airport Limited, 24 May 2017

[3] Heathrow Financial Ratios – 30 Sept 2018

[4] Investor Report December 2018 – Forecast ratio for YE 31 Dec 2018

3 LHR financial structure

HAL current capital structure (cont'd) &

Comparison of actual vs. Q6 regulatory settlement cost of capital assumptions

Attractiveness of HAL to shareholders

- HAL's shareholders consist of Ferrovial S.A. (25%) and an array of financial investors (pension funds, infrastructure funds and sovereign wealth funds).
- HAL is brownfield asset with low exposure to revenue risk and a stable/favourable regulatory environment.
- Since FY12, HAL has produced strong dividends for its shareholders (on average c. £360m per annum in FY12-FY17).
- The scale of the R3 development is disproportionately larger than T2/T5 development and the appetite of existing investors along with their ability to finance R3 remains unclear, though a number of commitments have been made by HAL on this front. .

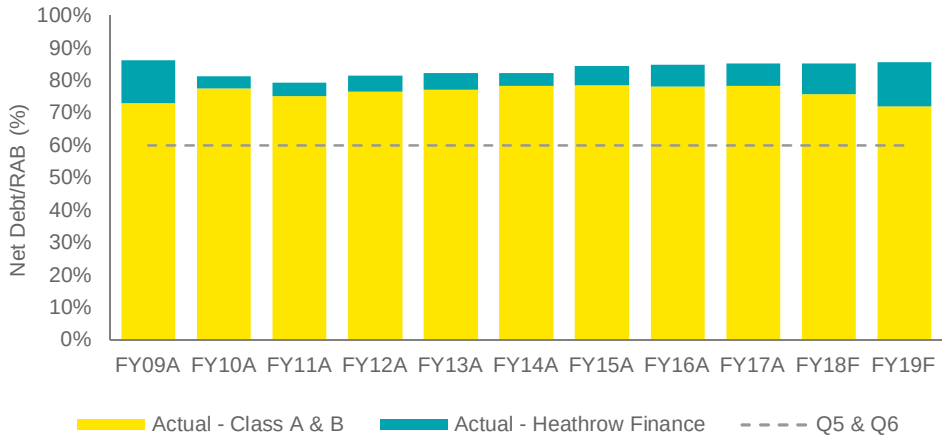
Commentary on gearing ratio

- HAL's gearing ratio (defined as net debt/RAB) of c.85% is significantly in excess of the notional gearing of 60%. This elevated level of gearing is consistent throughout the regulatory settlement period.

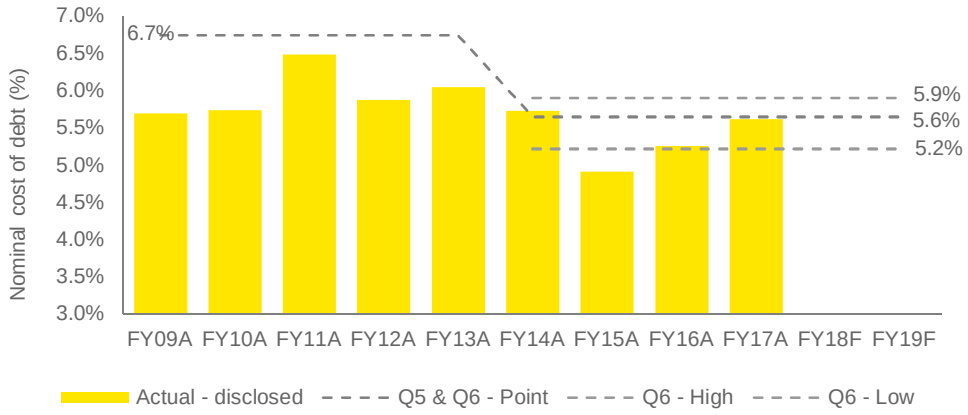
Commentary on cost of debt

- HAL's actual pre-tax cost of debt during Q6 is close to the CAA assumptions in the Q6 regulatory settlement, apart from outperformance in FY15.
- The limited demand risk (i.e., LHR operating at capacity) coupled with price certainty allows HAL to raise debt at low rates: 71% of RAB at A-, 8% at BBB and 7% at BB+[4,5]. This indicates a greater debt capacity/lower risk profile than the Q6 settlement which assumed HAL raising debt with a BBB/BBB+ credit rating up to 60% of RAB[6].

Historical Gearing (Regulatory Settlement vs. Actual)[1]



Nominal Cost of Debt (Regulatory Settlement vs. Actual)[3]



[1] Gearing data from Heathrow Roadshow Presentation (October 2018) and Heathrow Investor Report (December 2018)

[2] Cost of debt based on Heathrow Airport Holding Limited accounts

[3] Q5/Q6 regulatory settlement real cost of debt has been nominalised using the geometric average of inflation from FY09A-FY13A and FY15A-FY19F respectively.

[4] Heathrow SP Limited – Financial Results Presentation – 30 September 2018

[5] Fitch credit ratings

[6] CAP 1115 paragraph 6.81

3 LHR financial structure

Comparison of actual vs. Q6 regulatory settlement cost of capital assumptions (cont'd)

Cost of equity

- While the cost of equity for HAL cannot be observed, a 2017 thought leadership publication by the Global Infrastructure Investor Association (GIIA) and PwC found a decline in IRRs targeted by infrastructure funds from 14% in 2004 to 10.6% in 2016[5]. This has coincided with increasing investment flows to infrastructure and a maturing of the asset class.
- Notwithstanding the above, we would expect gearing at HAL above the notional level to result in higher risk to equity holders than assumed in the Q6 settlement. This increase in risk would ordinarily increase HAL's cost of equity (by way of an expectation of all to earn a higher rate of return).

Commentary on WACC

- Using a notional gearing ratio coupled with the actual cost of debt results in a higher estimate of WACC than if the actual gearing and cost of debt were used. We have kept Cost of Equity (CoE) constant in this illustrative analysis, though we recognise the CoE expectations will change at different gearing levels. A recalculation of the WACC using the average gearing (i.e., 85%), average cost of Equity from Q6 and average actual cost of debt results in a real vanilla WACC of c.3.58% (nominal c.5.98%). The objective is to demonstrate the movement in Real WACC due to a higher gearing alone.
- For comparison, Aéroport de Paris (ADP) and Frankfurt have agreed regulatory real vanilla WACCs of 4.0% and c. 4.7%[6].
- For completeness, we also reviewed PwC's report on the H7 cost of capital[9] dated February 2019, which suggests a pronounced drop (compared to the Q6 settlement) in in the Real Vanilla WACC; the key estimates and their drivers are as follows:

1. A real vanilla WACC of 2.5%-3.4% with a 60% notional gearing structure, this constitutes a (1.5%)-(2.4%) decrease relative to Q6.
2. A large part of the variance can be explained by a (2.0%)-(2.5%) decrease in the real-risk free rate, which decreases both the cost of equity and cost of debt.
3. There is a (2.0%) decrease in the cost of debt pre-R3.
4. Any CAA proposal on Gearing Sharing should be considered alongside the CAA's proposal that the regulatory WACC for H7 could have decreased significantly.

   Further, the PwC report has recommended using the notional gearing (60%) approach for H7 whilst have also suggested that CAA and HAL should consider a benefits sharing mechanism in the case where HAL is geared above the notional level.

	Q6 Regulatory Settlement			Actual/Forecast Data							Difference
	Point	Low	High	FY14A	FY15A	FY16A	FY17A	FY18F	FY19F	Average[1]	Q6 Point vs. Average
Gearing[2]	60%	60%	60%	82%	85%	85%	85%	85%	86%	85%	+25%
Cost of debt[3]	5.65%	5.22%	5.90%	5.73%	4.91%	5.26%	5.62%	N/A	N/A	5.38%	-0.27%
Cost of equity	9.84%	8.18%	10.16%	Here, we have used the average of the CoE from Q6 settlement						9.39%[7]	-2.10%
Tax rate	20.20%	20.20%	20.20%	21.50%	20.25%	20.00%	19.25%	19.00%	19.00%	19.83%	-0.37%
WACC (vanilla)	7.33%	6.64%	7.67%	Not an observable variable						5.98%[8]	-0.85%
Real WACC (vanilla)	4.85%	4.17%	5.18%	Not an observable variable						3.58%[8]	-0.83%

[1] Average is FY14 to latest available data point

[2] Gearing data from Heathrow Roadshow Presentation (Oct 2018) and Heathrow Investor Report (Dec 2018)

[3] Cost of debt based on Heathrow Airport Holding Limited accounts

[4] Q6 regulatory settlement cost of capital/debt/equity has been nominalised by adding the geometric average of inflation from FY15A-FY19F.

[5] PWC/GIIA Global Infrastructure Investment (2017)

[6] ADP's & Frankfurt's WACCs are converted from nominal to real using the ADP estimate of inflation of 1.3%

[7] Whilst an average of Q6 settlement is used here for demonstrating the movement in Real WACC due to gearing alone, the cost of equity is computed under Option 2B using the MM2 proposition (and the actual gearing)

[8] The real WACC is computed and inflation of 2.4% (average across the CP) is added to nominalise the amount

[9] PWC – Estimating the cost of capital for H7 (February 2019)

[10] Cost of debt movements for R3 and resulting R3 WACC recomputed using data from the original PWC R3 report (December 2017).

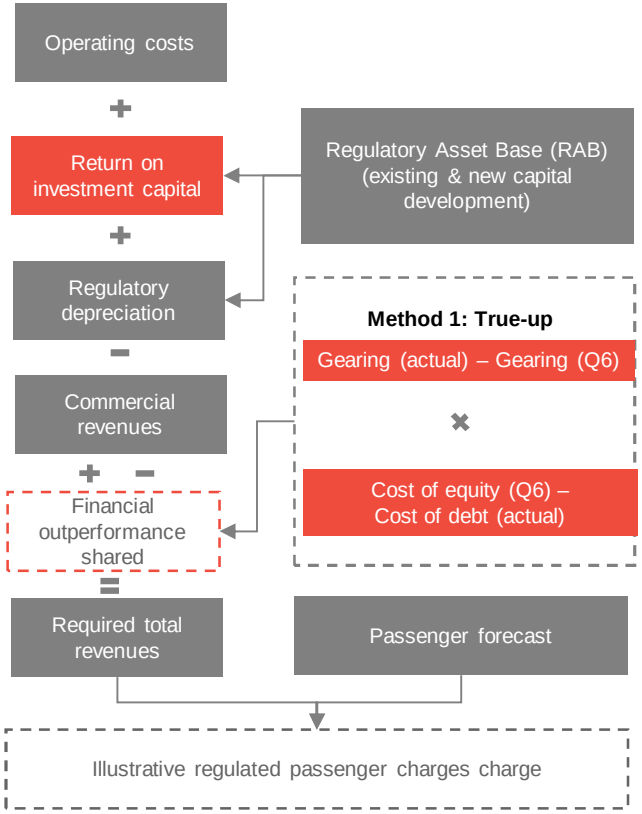
4

Gearing sharing mechanisms – options

4 Gearing sharing mechanisms – options

Methodology and assumptions of our assessment

HAL regulatory regime & options



Objective

- This section sets out possible options/alternatives through which Financial Outperformance achieved by HAL (due to an outturn gearing higher than assumed in the regulatory settlement) could be shared with customers.

Methodology

- Broadly speaking, we have used the following two different methodologies for Gearing Sharing:
  - the True-up (see Slide 26 and 27) – this uses the Ofwat formula and is to be implemented through a reduction (offsetting the gains made in the current period) in the Regulated Charges in the following period, and
  - Adjustments to the cost of capital (see Slide 28 and 29) - this is to be implemented through a reduction in the Cost of Capital in the following period.
- Using the above two methodologies of Gearing Sharing along the periodicity, we have developed 6 possible options/alternatives for CAA to implement a Gearing Sharing mechanism for LHR, if it is minded to do so. These Options (described in more details on the slide 31) are:
  - Options 1a and 1b: Method 1, True-up with adjustment to regulated charges at the end of the current period
  - Options 2a and 2b: Method 2, Adjustments to the cost of capital in the following period
  - Options 3a and 3b: Method 1 + Method 2, True-up with adjustment to regulated charges at the end of the current period + Adjustments to the cost of capital in the following period

  In all of the Options, "a" represents annual period and "b" represents the (5 year) Control Period.
- We have then presented a detailed qualitative assessment of each options, along with the status quo (ie. Current CAA regulation of HAL) testing the impact on key stakeholders and the CAA.
- We have also performed an illustrative high-level quantitative analysis using the Q6 regulatory settlement case. The outputs are presented in the following slides, the assumptions are outlined below and the calculations are presented in Appendix B. The quantitative analysis is performed so that the CAA can gain a rough understanding of the quantum of the options.

Method 1: True-up (with an adjustment to the regulated charge)

Background

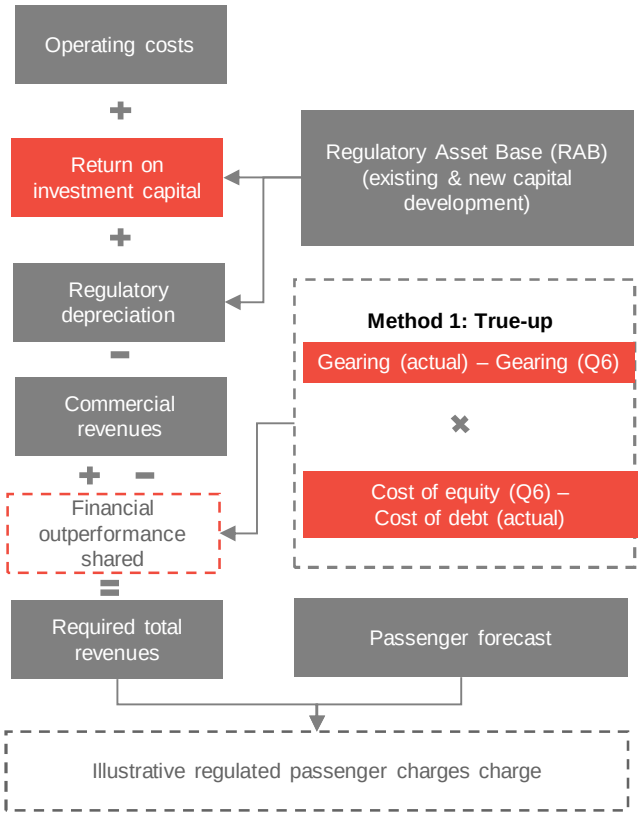
Ofwat proposed the following formula for sharing the benefits arising from financial outperformance due to higher leverage:

$$Sharing\ rate\ x\ (Notional\ Cost\ of\ Equity - Actual\ Cost\ of\ Debt)\ x\ (Actual\ Gearing - Reference\ Gearing)$$

4 Gearing sharing mechanisms – options

Methodology and assumptions of our assessment (cont'd)

HAL regulatory regime & options



Fixed inputs

Fixed CoC inputs

Variable inputs/outputs

Assumptions underpinning our calculations

- We assume a sharing rate of 50% as proposed by Ofwat.
- Our calculations use real returns to provide a comparison to the assumptions used by CAA for the Q6 settlement; Ofwat proposes to use the nominal cost of equity and nominal actual cost of debt.
- Ofwat proposes to use a notional gearing level of 60% and a dead-band of 5% over reference gearing of 65%. This results in the mechanism triggering at 70% but the formula using 65%. For simplicity we have used a 5% dead-band above the 60% notional gearing level; our mechanism therefore triggers at 65% and uses 65% as the reference gearing.
- We have applied the formula on the RAB to calculate the financial outperformance.

High-level considerations

- The mechanism does not explicitly correct for the additional tax shield from gearing, estimated in our illustrative analysis to be c. £24mn (RAB x 25% additional gearing x 20% tax rate x 3.2% Rd).
- Comments regarding the Option 1 formula:

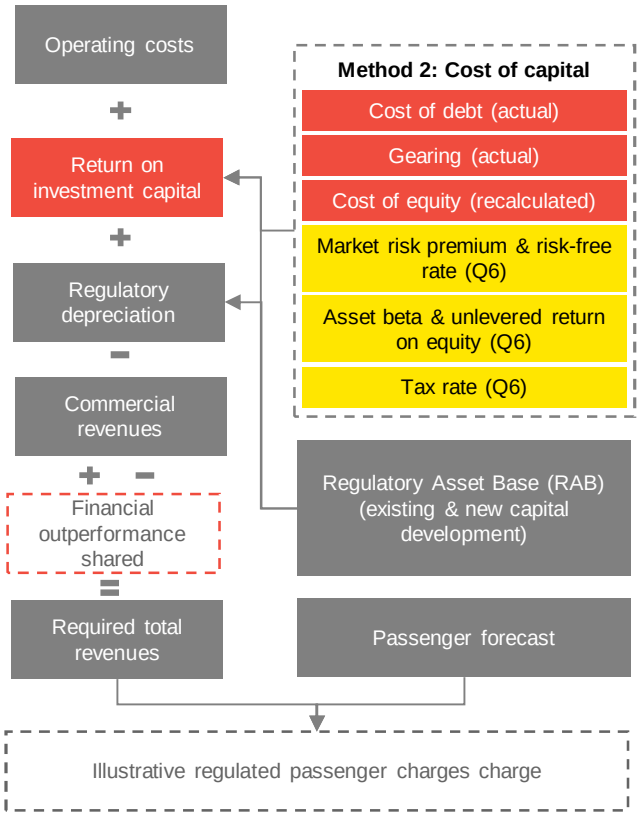
  $$Sharing\ rate\ x\ (Notional\ Cost\ of\ Equity - Actual\ Cost\ of\ Debt)\ x\ (Actual\ Gearing - Reference\ Gearing)$$

  - A True-up may incentivise deleveraging by HAL. Where the actual gearing is above the reference level, there is anticipated to be a large and positive difference between the notional cost of equity and actual cost of debt.
  - Ignoring the sharing rate, the formula is a simplification of the potential financial outperformance realised by HAL from a higher leverage. In theory, the shift towards the cheaper form of financing (i.e. debt) might be partially offset by both increases to the cost of equity and cost of debt to reflect the increased risk to capital providers. The cost of equity is not adjusted when carrying out these calculations.
  - The formula therefore risks calculating a level of financial outperformance, which is not proportional to the actual benefits of higher leverage realised by HAL.

4 Gearing sharing mechanisms – options

Methodology and assumptions of our assessment (cont'd)

HAL regulatory regime & options



Method 2: Adjusting the cost of capital:

Background

The formula devised by Ofwat is meant to apply to multiple water companies with a range of gearing levels. Conversely, CAA can take a bespoke approach with HAL (for its price control framework) .

A potential approach to account for the incremental benefit of additional gearing (that does not require the introduction of another regulatory device such as the True-up) is to reset the cost of capital. We use the outturn gearing level (instead of using the notional gearing level), actual cost of debt and implied cost of equity (based on a notional unlevered return on equity), all from the previous year (PY) or previous Control Period (CP) to calculate a revised WACC.

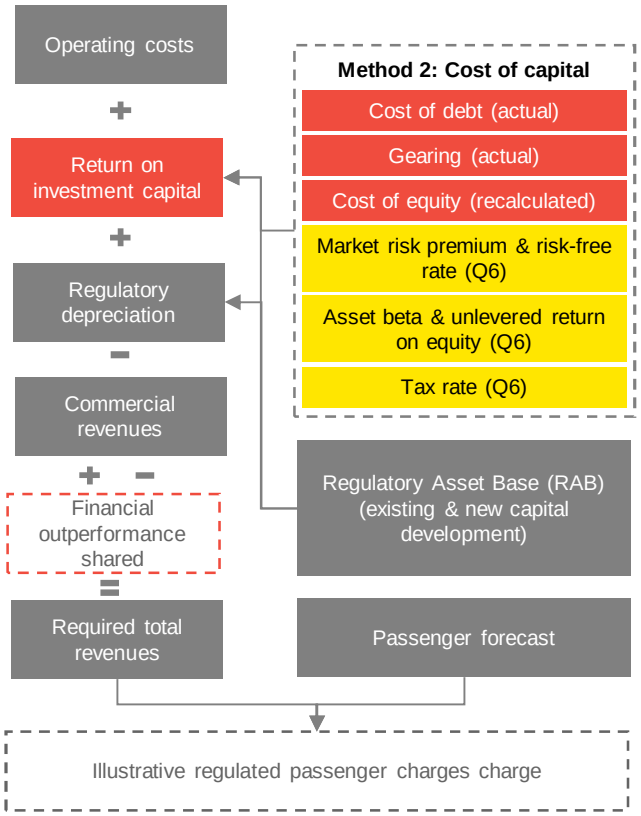
Assumptions underpinning our calculations

- Based on the Q6 asset beta (0.5), market risk premium (5.8%), risk-free rate (RFR) (1.0%), we have calculated an unlevered return on equity (Ru) of 3.9%.
- The actual cost of debt (real) over FY14-FY17 was estimated as c.3.0%, which approximates the 3.2% used in the Q6 regulatory settlement.
  - To avoid complexity in our illustrative quantitative analysis, the same cost of debt is used for the yearly and 5-year cost of capital reset methods.
- The cost of equity has been recalculated using MM2 Proposition II: Re=Ru+(Ru-Rd)(D/E)(1-T).
- To avoid complexity in our illustrative quantitative analysis, we have assumed no change in the tax rate since Q6, where it was assumed to be 20.2%. Further reductions to the corporate tax rate have been enacted which therefore are not reflected in our illustrative analysis.
- We have included a dead band of 5% in the gearing level. The WACC at 65% (60% notional + 5% dead band), ignoring changes to the cost of equity and debt, is recomputed at 5.3%. Relative to the WACC at the 60% notional gearing level of 5.6%, there is a delta of 0.3%. This 0.3% delta is used as a margin to HAL's benefit (to reflect the equivalent benefit of the dead band under Method1).
  1. Where the cost of capital is reset every 5-years (i.e., Option 2b), the reset cost of capital corresponds to a gearing level midway between the average of actual gearing levels (across the prior CP) and the dead band gearing level. If the re-computed actual WACC is 4.0%, we would use the mid-point of 4.0% & 5.3% (the recomputed WACC at 65% gearing) plus a 0.3% margin.
  2. Where the reset to the cost of capital is performed annually (i.e., Option 2a), the new regulatory WACC is the prior year regulatory WACC weighted at 2/3rds plus the WACC corresponding to the outturn gearing level (in the previous year) weighted at 1/3rd. The higher weighting towards past years is to provide a gentler glide path, but is in substance the same as Option 2b . As above, we have also added a 0.3% margin.

4 Gearing sharing mechanisms – options

Methodology and assumptions of our assessment (cont'd)

HAL regulatory regime & options



Fixed inputs

Fixed CoC inputs

Variable inputs/outputs

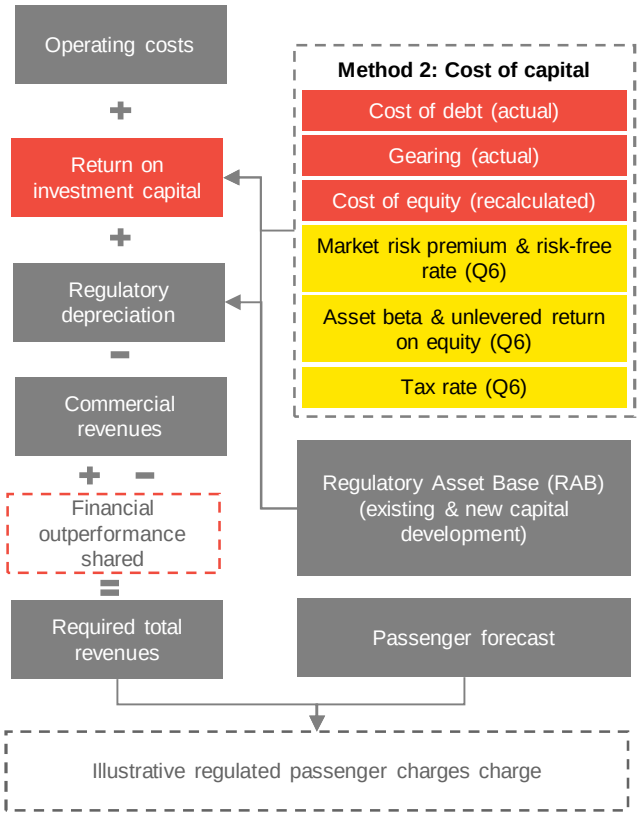
High-level considerations

- This mechanism still allows HAL to adopt its preferred financial structure. In the unlikely event of any significant deleveraging to below the notional gearing used by CAA, the mechanism does not compensate HAL for the outturn cost of capital being higher than that assumed at the regulatory settlement.
- In the event of financial distress at HAL, the CAA's use of the actual gearing ratio (assuming HAL remains highly geared) could be seen as an endorsement of the high gearing. The use of actuals (i.e. gearing and cost of debt) could be framed solely as a method for estimating the cost of capital. Other regulatory levers (e.g. financeability tests, minimum rating requirements, etc.) could be used to reign in excessive risk caused by elevated gearing, if desired.
- Method 2 is expected to reduce the allowed cost of capital, thereby reducing net cash flows to HAL. The reduced stream of cash flows to HAL could in turn reduce HAL's debt capacity to some extent.
- Method 2 mechanism corrects for the additional tax shield from gearing.
- We have used historical data to calculate the actual cost of debt, actual gearing and implied cost of equity (Q6 risk-free rate and equity risk premium). We presume that the CAA would use forward looking estimates for the actual cost of debt (i.e., yield on HAL's debt) and actual gearing (i.e., current gearing overlaid with HAL's business plans).
  - However, we note that given HAL's relatively complex international debt portfolio coupled with complex FX and interest rate swaps, assessing the actual cost of debt is a complex exercise. This means that implementing Method 2 may be less practical, especially on an annual basis.

4 Gearing sharing mechanisms – options

Methodology and assumptions of our assessment (cont'd)

HAL regulatory regime & options



Considerations common to Method 1 & 2

- The outputs of our quantitative analysis are illustrative in nature and aims to calculate the quantum of such gearing sharing options on the basis of assumptions set out here in. They are not intended to equal the benefits of additional gearing, which is a complex exercise.
- The net financial impact to HAL and passengers will be dependant on the actual passenger volumes, actual operating costs, the actual RAB, etc. The illustrative analysis we have performed use numbers in the Q6 settlement (for all inputs in grey and yellow), rather than actuals.
- We have used prior year gearing in lieu of the prior year average gearing for simplicity. If either of the mechanisms is implemented, we propose that average gearing be used to avoid distortions caused by fluctuations (if any) at year-end.
- To calculate the real cost of debt, we have removed the historical/forecasted inflation from the disclosed weighted average cost of debt (including inflation linked accretion).
- The actual gearing level and actual cost of debt includes the Heathrow Finance debt as this debt is financed through cash flow from Heathrow SP Limited. Our aim in both methods is to reflect the actual financing structure of HAL.
- The issue of levels of debt to include in the mechanism is complex, and consideration needs to be given to:
  1. Includes all debt with claims (whether secured, unsecured, senior or subordinated) on assets within the regulatory perimeter. Care should be taken in designing this mechanism so as to discourage debt being moved up the corporate structure.
  2. Dealing with debt-like liabilities (e.g., pension fund liabilities/long dated interest bearing obligations) so as not to incentivise HAL to exchange debt for debt-like obligations (i.e., higher pension deficits). How to classify HAL's extensive derivative portfolio (used to ensure financing obligations are met) should also be considered.
- For illustrative purposes, we have calculated dividends, aeronautical revenues and the cost of debt (for 2018 & 2019) and interest coverage ratio ("ICR") drivers (all years).
- Dividend and ICR calculations are an estimate only and assumes that the reduction in passenger charge revenue flows directly through to EBITDA calculations, i.e., no other cost or revenue adjustments. The effect of the change is measured against actual/forecast numbers for HAL.

Fixed inputs

Fixed CoC inputs

Variable inputs/outputs

4 Gearing sharing mechanisms – options

Options overview

- This section sets out a range of possible alternatives/options for implementing a Gearing Sharing mechanism that CAA could consider, should it decide to implement a Gearing Sharing mechanism for LHR.
- Ofwat recommendation includes a proposed formula to estimate the incremental financial outperformance attributed to a gearing level in the prior year (PY) in excess of the notional gearing assumed for the regulatory settlement. The exact mechanism for sharing this benefit is however not specified. Below, we have developed a number of options for sharing the benefits of Financial Outperformance (FO) from elevated gearing levels .
- The options shown below have been developed using different combinations of the two variables, (i) regulatory levers (True-up resulting in adjustments to the regulated passenger charge in the current year – Method 1 and adjustments to the cost of capital (CoC) – Method 2, whilst Method 3 is a combination of both Method 1 and 2), and (ii) periodicity (annual adjustments or adjustments at the end of a Control Period (CP))

Periodicity \ Regulatory levers	True-up with adjustment to regulated passenger charge (Method 1)	Adjustment to cost of capital (Method 2)	Both methods
Annual	**Option 1a:** **CoC remains unchanged** **PY FO is estimated using Ofwat formula** **Benefits shared by reducing passenger charges in the current year**	**Option 2a:** **CoC is reset based on PY gearing and passenger charges recalculated every year** **No True-up of FO in the PY**	**Option 3a:** ► CoC is reset based on PY average gearing and passenger charges recalculated every year ► PY FO is estimated using Ofwat formula ► Benefits shared by further reducing passenger charges in the current year
Over the control period	**Option 1b:** ► CoC remains unchanged ► FO in the previous CP is estimated using Ofwat formula ► Benefits shared by reducing passenger charges in the current CP	**Option 2b:** ► CoC based on average gearing over the previous CP is used to calculate passenger charges for the current CP ► No True-up of FO in the previous CP	**Option 3b:** ► CoC based on average gearing over the previous CP is used to calculate passenger charges for the current CP ► FO in the previous CP is estimated using Ofwat formula ► Benefits shared by further reducing passenger charges in the current CP

- Whilst, we have considered an “annual” periodicity for implementing various “Gearing Sharing” options (as shown above), in view of the practical difficulties in implementing the annual options for LHR, we have not progressed these (highlighted in red above) further in this report.

4 Gearing sharing mechanisms – options

Discussion on the current CAA regulation of Heathrow (status quo)

Overview

- The cost of capital for the regulatory period is set based on a notional capital structure at the start of the regulatory settlement, which remains unchanged over the Control Period (CP).
- The notional gearing has historically been set at 60% for Q5 & Q6. The CAA determines an appropriate cost of equity and debt based on the notional gearing level.

Implications for CAA

- ü The current methodology has been in place for a number of years, is familiar to stakeholders and consultative thereby increasing the perception of regulatory stability
- ü Maintaining the status quo avoids the effort involved in changing methodologies and the raft of regulation (and on-going supervision) to ensure the mechanism functions as envisioned.
- û If the chosen WACC overstates the cost of capital in light of a low notional gearing level, then the passengers could be paying too much. Further, there could be a concern that the regulated entity achieves returns in excwss of allowed/appropriate returns.
- û The current methodology does not reflect that HAL's actual gearing is far in excess of past regulatory settlements. Given that the CAA only regulates passenger airport charges at HAL, it can adopt a more bespoke approach to HAL (e.g., the regulatory settlement can trend towards actuals as opposed to using notional numbers).

Customer (Passengers/Airlines)

- û The higher gearing at HAL (c.85%) may result in potential costs of financial distress being imposed on passengers (or taxpayers) in the absence of a special administration regime. These costs may take the form of direct costs arising from bankruptcy (i.e., restructuring) and/or worsening operational performance (e.g., stemming from postponed CAPEX or poorly considered cost cuts).
- û Passengers charges may be too high, on account of a higher CoC.

Shareholders

- ü The status quo is seen as favourable/stable – the status quo is more likely to be consistent with the ex-ante assumptions of equity holders
- ü Enhanced returns for shareholders to the extent gearing lowers the actual WACC below the regulatory WACC. Finance theory accepts that HAL shareholders have increased the value of the firm (and their equity) through a tax shield that is greater than that assumed in the regulatory settlement.
- ü HAL's equity remains attractive to investors. This should encourage reinvestment of profits and facilitate finding new equity investors to fund R3.
- ü Free to choose optimal capital structure without any restrictions.

Lenders

- ü No effect on debt covenants.
- ü No revision by credit rating agencies to their views of HAL's regulatory regime.
- ü Credit ratings are maintained at their current levels
- ü HAL maintains access to its efficient debt-raising platform (avg. £1.7bn p.a. in last 8 years), allowing HAL to raise significant capital needed for R3.

4 Gearing sharing mechanisms – options

Option 1b: True-up – Adjustment to regulated passenger charge (offset of prior CP financial outperformance)

Option definition

- CoC, based on gearing assumed at the regulatory settlement, remains unchanged over the Control Period (CP).
- Financial outperformance due to an outturn gearing (higher than the gearing assumed at the settlement) in the prior CP is calculated using the Ofwat formula and outperformance in the prior CP is deducted from the regulated passenger charge in the following CP.
- We assume a dead-band of 5% over notional gearing of 60%
- 50% of the financial outperformance is shared with customers

How it impacts LHR

- The actual financial impact is not insignificant. Our illustrative analysis shows:
  - LHR revenues decline by c.£60mn/pa; this represents c.4% of Q6 regulatory settlement required revenues.
  - Across 5 years the decrease in required revenues is £298mn.
- Given that LHR is operating at near full capacity, lowering the passenger charges is unlikely to generate substantially greater passenger volumes.
- Any change in interest rates will be reflected in HAL's actual cost of debt, which will affect the calculation of FO to be shared. However, given HAL's long-dated debt profile and distributed maturity schedule, we expect the cost of debt to be relatively stable from year to year and therefore do not expect the introduction of significant volatility into passenger charges.

Implications for CAA

- ü Formula driven/simple to operate and the adjustment fits with CAA's 5 year regulatory settlement window
- û Perception of enhanced regulatory risk due to the replication of Ofwat's regulatory device, which has been unpopular with investors in part because it was perceived as retrospective
- û Increased scrutiny from the CAA will be required to ensure the mechanism operates as intended without the possibility for gaming (eg., all appropriate debt instruments are included).

Customer (Passengers/Airlines)

- ü Decreased charges to airlines but CAA cannot ensure these are passed on to the customers; illustrative analysis indicates c.3% reduction
- û Additional administrative burden on CAA, LHR and Airlines to ensure charges being levied are the latest/updated (although the burden is reduced where the adjustment is performed each CP instead of annually)

Shareholders

- û Illustrative analysis shows c.3% reduction to EBITDA and a 16% reduction in dividends.
- û From our illustrative example, the impact will be most acutely felt by shareholders.
- û May distort HAL's incentives to optimize its financial structure given the requirement for cash-outflows to customers (reduced inflows) now associated with higher gearing levels.
- û HAL may have to carry a provision in its accounts during the control period, in anticipation of True-ups.

Lenders

- û The group interest cover ratio (ICR) marginally decreases to 2.3x from 2.4x as per the illustrative analysis; the covenant is breached at 1.0x
- û Adjustment is likely to be perceived as retrospective, raising uncertainty about future cash flows, increasing likelihood of regulatory regime downgrade (by credit rating agencies) and therefore could raise the cost of debt over time

Common stakeholder considerations covered on slide 37

4 Gearing sharing mechanisms – options

Option 2b : Adjustment to the cost of capital (control period reset)

Option definition

- CoC is reset every control period based on prior control period (PCP) inputs. The goal is to reflect the actual capital structure rather than notional capital structure.
- The prior control period actual WACC is determined as follows: (i) We have observed the average historical cost of debt (Rd) at c.3.0% (ii) The gearing is determined by an average of historical actuals (iii) The cost of equity is determined by MM Proposition II (the cost of equity is a function of Ru, Rd, gearing and the tax rate).
- No True-up is proposed for variances in the prior control period.
- The WACC for the current CP is the mean of the actual WACC and the WACC corresponding to the dead band gearing of 65% (i.e. 5.3%) plus a margin to HAL's benefit of 0.3% (to reflect the equivalent benefit of a dead band under Option 1).

How it impacts LHR

- The actual financial impact is not insignificant. Our illustrative analysis shows:
  - LHR revenues decline by c.£88mn/pa; this represents c.6% of Q6 regulatory settlement required revenues.
  - Across 5 years the decrease in required revenues is £442mn.
- Given that LHR is operating at near full capacity, lowering the passenger charges is unlikely to generate substantially greater passenger volumes.

Implications for CAA

- ü Fits into existing CAA's 5 year regulatory settlement window and framework.
- Whilst there is scope for the perception of enhanced regulatory risk (due to the regulatory cost of capital being cut), the use of an existing regulatory lever (i.e., adjusting the cost of capital) coupled with actual inputs is likely to be perceived as more equitable and targeted than the True-up mechanism.
- û Increased scrutiny from the CAA will be required to ensure the mechanism operates as intended without the possibility for gaming (i.e., all appropriate debt instruments are included and the cost of debt is correctly calculated).

Customer (Passengers/Airlines)

- ü Decreased charges to airlines but CAA cannot ensure these are passed on to the customers; illustrative analysis indicates c.5% reduction
- û There is no mechanism to compensate HAL for a the cost of capital increase should it de-lever. This method may therefore lock-in high leverage at HAL (updating the CoC does not explicitly discourage high gearing). Should HAL encounter financial distress, there is a risk this leads to deferred capital investment or falling operational performance (as cost cuts are made to keep the business afloat).

Shareholders

- û Illustrative analysis shows c.5% reduction to EBITDA and a 23% reduction in dividends.
- û From our illustrative example, the impact will be most acutely felt by shareholders.
- ü Forward looking adjustment to the control period can allow shareholders and management to make informed decisions on the planning of the capital structure.
- û Using the actual cost of debt may disincentive shareholders from financing HAL efficiently.

Lenders

- û The group interest cover ratio (ICR) decreases to 2.2x from 2.4x as per the illustrative analysis; the covenant is breached at 1.0x
- The incentive to de-lever is indirect. Decreased cash flows to HAL will decrease its debt capacity. The overall quantum of debt is likely to fall as a result.

Common stakeholder considerations covered on slide 37

4 Gearing sharing mechanisms – options

Option 3b: True-up – Adjustment to regulated passenger charge (offset of prior CP financial outperformance) & Adjustment to the cost of capital (control period reset)

Option definition

- CoC is reset every control period based on prior control period inputs. The goal is to reflect the actual capital structure rather than notional capital structure.
- No True-up is proposed for variances in the prior control period and a 5% dead band is proposed on the notional gearing (i.e., 60% + 5% = 65%).
- The WACC for the current CP is the mean of the actual WACC and the WACC corresponding to the dead band gearing of 65% (i.e. 5.3%) plus a margin to HAL's benefit of 0.3% (to reflect the equivalent benefit of a dead band under Option 1) – as calculated in Option 2b
- In addition to resetting the WACC, it is also proposed to seek the True-up of gains made in the prior control period (similar to Option 1b).
  - Prior CP financial outperformance due to gearing is calculated with the Ofwat formula and corrected in the current control period through an adjustment to the regulated passenger charge (as described under Option 1b).
- We anticipate that Option 3b will only be materially different to Option 2b in the first CP where the PCP financial outperformance is clawed back. Beyond the first period, provided the gearing stays constant, the notional gearing will increase to 85% (+ 5% deadband) such that there is no True-up.

How it impacts LHR

- The actual financial impact is likely to be significant. Our illustrative analysis shows:
  - LHR revenues decline by c.£154/pa; this represents c.10% of Q6 regulatory settlement required revenues.
  - Across 5 years the decrease in required revenues is £769mn.
- Given that LHR is operating at near full capacity, lowering the passenger charges is unlikely to generate substantially greater passenger volumes.

Implications for CAA

- û Increased scrutiny from the CAA will be required to ensure the mechanism operates as intended without the possibility for gaming (i.e., all appropriate debt instruments are included and the cost of debt is correctly calculated).
- ü Consistent with CAA's 5 year regulatory window; however Option 3b involves introducing a new mechanism. Operating two levers may be too complex.
- û Perception of enhanced regulatory risk due to the replication of Ofwat's regulatory device, which has been unpopular with investors in part because it was perceived as retrospective
- û Using both mechanism will be hard to label as outperformance sharing and risks being perceived as penal because the cost of capital is being reduced (through the use of a higher gearing assumption) on top of which there is a True-up.

Customer (Passengers/Airlines)

- ü Decreased charges to airlines but CAA cannot ensure these are passed on to the customers; illustrative analysis indicates c.9% reduction - this is a relatively large reduction on airport charges.
- û Additional administrative burden on CAA, LHR and Airlines to ensure charges being levied are the latest/updated

Shareholders

- û Illustrative analysis shows c.9% reduction to EBITDA and a 41% reduction in dividends.
- û From our illustrative example, the impact will be most acutely felt by shareholders. In this option, the impact is relatively high.
- û Material decrease in cashflows to shareholders will affect investor appetite to deploy more capital and finance R3 CAPEX.
- û May distort HAL's incentives to optimize its financial structure given the requirement for cash-outflows to customers (reduced inflows) now associated with higher gearing levels.
- û HAL may have to carry a provision in its accounts during the control period, potentially leading to dividend blocks.

4 Gearing sharing mechanisms – options

Option 3b: True-up – Adjustment to regulated passenger charge (offset of prior CP financial outperformance) & Adjustment to the cost of capital (control period reset) ….contd.

Customer (Passengers/Airlines)

- ü Decreased charges to airlines but CAA cannot ensure these are passed on to the customers; illustrative analysis indicates c.9% reduction - this is a relatively large reduction on airport charges.
- û Additional administrative burden on CAA, LHR and Airlines to ensure charges being levied are the latest/updated

Shareholders

- û Illustrative analysis shows c.9% reduction to EBITDA and a 41% reduction in dividends.
- û From our illustrative example, the impact will be most acutely felt by shareholders. In this option, the impact is relatively high.
- û Material decrease in cashflows to shareholders will affect investor appetite to deploy more capital and finance R3 CAPEX.
- û May distort HAL's incentives to optimize its financial structure given the requirement for cash-outflows to customers (reduced inflows) now associated with higher gearing levels.
- û HAL may have to carry a provision in its accounts during the control period, potentially leading to dividend blocks.

Lenders

- û The group interest cover ratio (ICR) decreases to 2.1x from 2.4x as per the illustrative analysis; the covenant is breached at 1.0x
- û Adjustment is perceived as penal and retrospective, raising uncertainty about future cash flows, increasing likelihood of regulatory regime downgrade (by credit rating agencies) and therefore raising the cost of debt. The reaction is expected to be more pronounced than Option 1 or 2.

Common stakeholder considerations covered on slide 37

4 Gearing sharing mechanisms - options

Stakeholder considerations: Common Consideration to all the 3 Options

Overview/Methodology Statement

- ► All methods share a number of common implications for HAL and its stakeholders. Broadly, the proposals are expected to decrease passenger charges, thereby also decreasing HAL's revenues.
- ► This is expected to adversely impact shareholders and lenders, though the impact is relatively high in Option 3.
- ► Our analysis excludes the CAA, as the implications to the regulator exhibit greater variance from method to method.

Customer (Passengers/Airlines)

- ü Decreased charges to airlines – though unclear if airlines will pass it to customers. However, if the implementation of gearing sharing mechanism results in a credit rating downgrade or an increase in cost of debt, some of the benefits could be lost over time.
- ü Once R3 is completed, LHR would have significantly higher capacity. Lower charges could drive volume growth and utilise the increased capacity. However, there may be significant changes to the capital structure in order to allow for the R3 development.
- û Unclear whether savings realised by airlines will be passed to customers

Shareholders

- ► Ownership structure has been stable since 2014, though it went through a number of changes in the prior years – consistent dividends/returns since 2012. Decreased returns/dividends and cash available for reinvestment are likely as a result of a regulatory intervention with a substantial impact in Option 3. This may limit the appetite for reinvestment in HAL by existing shareholders and/or new equity investors.
- û Regulatory regime historically seen as being favourable/stable – any changes will impact underlying investment assumptions of equity holders.
- ► Whilst shareholder profiles suggest they are longer-term investors, CAA should consider both the potential short-term and long-term impacts on returns to shareholders from a proposed Gearing Sharing mechanism.

Lenders

- û Will decrease the interest cover ratio (ICR); though our illustrative analysis shows that the change does not have a material reduction to ICR (except Option 3).
- û The more prevalent risk is that of a rating downgrade (due to regulatory risk) which has a few key impacts:
  1. Minimum rating covenants which sit one notch below where the Class A & B debt is currently rated could be breached.
  2. Any loss of investment grade rating on the Class B debt would reduce the pool of available buyers (e.g., insurers who have a greater appetite for investment grade debt). Access to a large pool of buyers is necessary to absorb forecasted issuance of debt necessary for R3.
  3. A rating downgrade of the senior tranches would negatively impact the credit quality of subordinated HoldCo debt, further limiting the market to investors and potentially increasing the CoC.
  4. HAL has raised significant debt in the past (avg. £1.7bn p.a. in last 8 years) – changes to the regulatory regime may negatively impact access and pricing of debt funding available. New investors may be put-off by volatility in the regulatory regime and/or increased uncertainty over expected cash-flows.
- û Terms of existing debt may need to be adjusted/revisited due to clauses affected by changes in the regulatory regime, which may affect the timing or pricing of debt.
- ► All methods reduce cash flows to HAL, which might reduce the debt capacity of the business over time.
- û Both measures may incentivise HAL's shareholders to shift debt up the holding structure as a means of reducing the reported actual gearing. Debt in HoldCos may be more expensive due to the non-deductibility of dividends for tax as opposed to interest expense.

5

Summary

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5 Summary

Options summary

Stakeholders / Options →	CAA – Implementation considerations	Other considerations	LHR, Customers, Shareholders and Lenders
1b. True-up – Adjustment to regulated passenger charge (offset of prior CP financial outperformance)	ü Easy to operate ü 5yr window	ü Captures historical outperformance O Does not capture tax shield O Perceived as inconsistent with other regulators (ex. Ofwat) and MM O Disincentivises higher gearing (without the consideration of an optimal capital structure) O Retrospective nature increases regulatory risk perception	O All methods reduce LHR revenue ► Before R3, no increase in demand is expected to result from lower passenger charges ü Customers benefit from lower charges (although the extent to which airlines will pass along savings is unclear) O All options reduce equity values, shareholder returns, dividends and capital available for reinvestment O All options could affect ICR covenants and result in a possible rating downgrade. This might particularly affect the credit quality. ► All methods reduce HAL's debt capacity and should encourage deleveraging. ► Any effects will be magnified by the R3 expansion. The chosen option should balance R3 financeability with reasonable passenger charges. Changes to the capital structure due to R3 (i.e., possible higher cost of equity to account for higher risk or corresponding deleveraging) should be borne in mind. ► We note that the capital structure may be materially different under an R3 scenario, meaning the financial outcomes of the gearing sharing mechanism may not be as significant.
2b. Adjustment to the cost of capital (control period reset)	ü Fits into existing framework ü 5yr window	► Historical outperformance untouched ü Captures tax shield ü Consistent with MM O Locks in high gearing (unless another mechanism is introduced); this may create risks to customers	
3b. True-up – Adjustment to regulated passenger charge (offset of prior CP financial outperformance) & Adjustment to the cost of capital (control period reset)	O Impractical to operate two methods	ü Captures historical outperformance ü Captures tax shield O Inconsistent with other regulators O Penalises optimal capital structure using a high gearing O Retrospective nature increases regulatory risk perception	
Overall	ü Options 'b' operate in line with the regulatory cycle, thus easier to operate ► Introducing a true-up adds complexity to the regulatory framework O Where actual inputs are used the difficulties of what is debt and what debt to include arises	► Methods 1 & 3 capture historical outperformance/Method 2 does not O Method 1 & 3 are perceived as inconsistent with MM/Method 2 is not ► Methods 1 & 3 will penalise higher gearing/Method 2 may lock-in higher gearing	

6

Appendices

6 Appendices

A. Comparison of different options on stakeholder metrics (average across illustrative period)

Option	1A[1]	1B	2A[1]	2B	3B
Average decrease in required revenues	(61)	(60)	(75)	(88)	(154)
Aeronautical revenue	1,753	1,742	1,753	1,742	1,742
Change	(61)	(60)	(75)	(88)	(154)
New Aeronautical revenue	1,692	1,683	1,678	1,654	1,588
Change Aeronautical revenue (%)	**(3%)**	**(3%)**	**(4%)**	**(5%)**	**(9%)**
Revenue	2,934	2,900	2,934	2,900	2,900
Change	(61)	(60)	(75)	(88)	(154)
New Revenue	2,873	2,840	2,859	2,812	2,746
Change Revenue (%)	**(2%)**	**(2%)**	**(3%)**	**(3%)**	**(5%)**
Adjusted EBITDA	1760	1729	1760	1729	1729
Change	(61)	(60)	(75)	(88)	(154)
New Adjusted EBITDA	1,699	1,669	1,685	1,640	1,575
Change Adjusted EBITDA (%)	**(3%)**	**(3%)**	**(4%)**	**(5%)**	**(9%)**
Cash flow	1,368	1,354	1,368	1,354	1,354
Change	(61)	(60)	(75)	(88)	(154)
New Cash flow	1,307	1,294	1,294	1,265	1,200
Group interest paid	561	569	561	569	569
Group ICR (existing estimated)	2.4	2.4	2.4	2.4	2.4
New Group ICR	2.3	2.3	2.3	2.2	2.1
Dividends	417	394	417	394	394
Change	(61)	(60)	(75)	(88)	(154)
New Dividends	356	334	343	305	240
Change Dividends (%)	**(15%)**	**(16%)**	**(18%)**	**(23%)**	**(41%)**

[1] Options 1A & 1B take the average impact across 4 years (as it takes one year for the mechanism to kick in); Options 1B,2B and 3B are an average across 5 years

[2] The figures for aeronautical revenues, revenue, adjusted EBITDA, cash flow inputs (for ICR covenant) and group interest paid are actual numbers per Heathrow (SP) Limited's annual accounts. The FY18 & FY19 numbers are per the Heathrow December 2018 Investor Report

[3] The inputs to the ICR ratio (cash flow and group interest paid) were not readily available and have been estimated using the ratios disclosed by HAL.

Gearing sharing mechanisms – options

B. Calculations of behind illustrative examples - Option 1a: True-up – Adjustment to regulated passenger charge (offset of PY financial outperformance)

Q6 Settlement					
Q6 Settlement Price/Pax	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**
Cost of Capital	772	772	773	767	757
Other revenues & costs	789	733	701	683	671
Required revenue	1,561	1,505	1,474	1,450	1,428
Passengers (m)	70.8	71.0	71.7	72.5	73.2
Charge/pax (£)	22.0	21.2	20.6	20.0	19.5
Q6 Cost of Capital	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**
RAB	13,791	13,791	13,799	13,693	13,511
Old pre-tax WACC (%)	5.6%	5.6%	5.6%	5.6%	5.6%
Old Cost of Capital	772	772	773	767	757
Q6 WACC inputs	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**
Gearing	60.0%	60.0%	60.0%	60.0%	60.0%
Tax rate	20.2%	20.2%	20.2%	20.2%	20.2%
Asset beta	0.50	0.50	0.50	0.50	0.50
Real risk free rate	1.0%	1.0%	1.0%	1.0%	1.0%
Equity risk premium	5.8%	5.8%	5.8%	5.8%	5.8%
Cost of debt	3.2%	3.2%	3.2%	3.2%	3.2%
Cost of equity	7.3%	7.3%	7.3%	7.3%	7.3%
Existing pre-tax WACC	5.6%	5.6%	5.6%	5.6%	5.6%

Q6 Settlement (Restated w/ Adjustment)						
True-up calculation	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**	**Average/Sum**
Actual gearing	84.5%	84.9%	85.4%	85.4%	85.7%	
Reference gearing	65.0%	65.0%	65.0%	65.0%	65.0%	
Difference in gearing (A)	19.5%	19.9%	20.4%	20.4%	20.7%	
Notional cost of equity	7.3%	7.3%	7.3%	7.3%	7.3%	
Less: Actual cost of debt	-3.9%	-3.5%	-2.0%	-2.3%	-3.5%	
Spread (B)	3.4%	3.9%	5.3%	5.0%	3.9%	
Financial outperformance (%) (C) = (AxB)	0.7%	0.8%	1.1%	1.0%	0.8%	
RAB (D)	13,791	13,791	13,799	13,693	13,511	
Financial outperformance (£mn) (E) = (CxD)	92	106	149	140	108	
Sharing rate (F)	50%	50%	50%	50%	50%	
Financial outperformance to be shared (£mn) (G) = (ExF)	46	53	75	70	54	Sum = 298
Settlement Price/Pax	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**	**Average/Sum**
Notional cost of capital	772	772	773	767	757	
Other revenues & costs	789	733	701	683	671	
Benefit from excess[1] (-G, 1 yr offset)		(46)	(53)	(75)	(70)	
New required revenue	1,561	1,459	1,421	1,375	1,358	
Passengers (m)	70.8	71.0	71.7	72.5	73.2	
New charge/pax (£)	22.0	20.6	19.8	19.0	18.6	Average = 20.0
Difference required revenue	**0**	**(46)**	**(53)**	**(75)**	**(70)**	**Sum = (244)**
Difference charge/pax	**0.0**	**(0.6)**	**(0.7)**	**(1.0)**	**(1.0)**	**Average = (0.7)**

[1] We have not shown the FY14 Financial Outperformance being offset in FY15 (i.e., we only show the benefit of 4 years of financial outperformance). The financial outperformance from FY19 carried forward is £54.2mn.

Gearing sharing mechanisms – options

B. Calculations of behind illustrative examples - Option 1b: True-up – Adjustment to regulated passenger charge (offset of prior CP financial outperformance)

Q6 Settlement					
Q6 Settlement Price/Pax	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**
Cost of Capital	772	772	773	767	757
Other revenues & costs	789	733	701	683	671
Required revenue	1,561	1,505	1,474	1,450	1,428
Passengers (m)	70.8	71.0	71.7	72.5	73.2
Charge/pax (£)	22.0	21.2	20.6	20.0	19.5
Q6 Cost of Capital	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**
RAB	13,791	13,791	13,799	13,693	13,511
Old pre-tax WACC (%)	5.6%	5.6%	5.6%	5.6%	5.6%
Old Cost of Capital	772	772	773	767	757
Q6 WACC inputs	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**
Gearing	60.0%	60.0%	60.0%	60.0%	60.0%
Tax rate	20.2%	20.2%	20.2%	20.2%	20.2%
Asset beta	0.50	0.50	0.50	0.50	0.50
Real risk free rate	1.0%	1.0%	1.0%	1.0%	1.0%
Equity risk premium	5.8%	5.8%	5.8%	5.8%	5.8%
Cost of debt	3.2%	3.2%	3.2%	3.2%	3.2%
Cost of equity	7.3%	7.3%	7.3%	7.3%	7.3%
Existing pre-tax WACC	5.6%	5.6%	5.6%	5.6%	5.6%

Q6 Settlement (Restated w/ Adjustment)						
True-up calculation	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**	**Average/Sum**
Actual gearing	84.5%	84.9%	85.4%	85.4%	85.7%	
Reference gearing	65.0%	65.0%	65.0%	65.0%	65.0%	
Difference in gearing (A)	19.5%	19.9%	20.4%	20.4%	20.7%	
Notional cost of equity	7.3%	7.3%	7.3%	7.3%	7.3%	
Less: Actual cost of debt	-3.9%	-3.5%	-2.0%	-2.3%	-3.5%	
Spread (B)	3.4%	3.9%	5.3%	5.0%	3.9%	
Financial outperformance (%) (C) = (AxB)	0.7%	0.8%	1.1%	1.0%	0.8%	
RAB (D)	13,791	13,791	13,799	13,693	13,511	
Financial outperformance (£mn) (E) = (CxD)	92	106	149	140	108	
Sharing rate (F)	50%	50%	50%	50%	50%	
Financial outperformance to be shared (£mn) (G) = (ExF)	46	53	75	70	54	Sum = 298
Settlement Price/Pax	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**	**Average/Sum**
Notional cost of capital	772	772	773	767	757	
Other revenues & costs	789	733	701	683	671	
Benefit from excess[1] (-G, 1 yr offset)	(60)	(60)	(60)	(60)	(60)	
New required revenue	1,501	1,445	1,414	1,390	1,368	
Passengers (m)	70.8	71.0	71.7	72.5	73.2	
New charge/pax (£)	21.2	20.4	19.7	19.2	18.7	Average = 20.0
Difference required revenue	**(60)**	**(60)**	**(60)**	**(60)**	**(60)**	**Sum = (298)**
Difference charge/pax	**(0.8)**	**(0.8)**	**(0.8)**	**(0.8)**	**(0.8)**	**Average = (0.8)**

[1] Makes the implicit assumption that Q6 Restated follows Q6 As-Is (for illustrative purposes).

Gearing sharing mechanisms – options

B. Calculations of behind illustrative examples - Option 2a: Adjustment to the cost of capital (annual reset)

	Q6 Settlement				
Q6 Settlement Price/Pax	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**
Cost of Capital	772	772	773	767	757
Other revenues & costs	789	733	701	683	671
Required revenue	1,561	1,505	1,474	1,450	1,428
Passengers (m)	70.8	71.0	71.7	72.5	73.2
Charge/pax (£)	22.0	21.2	20.6	20.0	19.5
Q6 Cost of Capital	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**
RAB	13,791	13,791	13,799	13,693	13,511
Old pre-tax WACC (%)	5.6%	5.6%	5.6%	5.6%	5.6%
Old Cost of Capital	772	772	773	767	757
Q6 WACC inputs	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**
Gearing	60.0%	60.0%	60.0%	60.0%	60.0%
Tax rate	20.2%	20.2%	20.2%	20.2%	20.2%
Asset beta	0.50	0.50	0.50	0.50	0.50
Real risk free rate	1.0%	1.0%	1.0%	1.0%	1.0%
Equity risk premium	5.8%	5.8%	5.8%	5.8%	5.8%
Cost of debt	3.2%	3.2%	3.2%	3.2%	3.2%
Cost of equity	7.3%	7.3%	7.3%	7.3%	7.3%
Existing pre-tax WACC	5.6%	5.6%	5.6%	5.6%	5.6%

	Q6 Settlement (Restated w/Adjustment)				
Calculation of deadband WACC margin	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**
Q6 Pre-tax WACC (A)	5.6%	5.6%	5.6%	5.6%	5.6%
Deadband gearing	65%	65%	65%	65%	65%
Deadband WACC[1] (B)	5.3%	5.3%	5.3%	5.3%	5.3%
Deadband WACC margin (C) = (A-B)	0.3%	0.3%	0.3%	0.3%	0.3%

	Q6 Settlement (Restated w/Adjustment)					
New WACC	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**	**Average**
Actual Gearing	84.5%	84.9%	85.4%	85.4%	85.7%	85.2%
Tax rate	20.2%	20.2%	20.2%	20.2%	20.2%	20.2%
Asset beta	0.50	0.50	0.50	0.50	0.50	0.50
Real risk free rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Equity risk premium	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%
R(u) - unlevered cost of equity	N/A	N/A	N/A	N/A	N/A	3.9%
Cost of debt	3.9%	3.5%	2.0%	2.3%	3.5%	3.0%
Cost of equity	7.5%	7.7%	7.8%	7.8%	7.9%	
Actual pre-tax WACC	4.0%	4.0%	4.0%	4.0%	4.0%	
Deadband/PY WACC	5.3%	5.2%	5.1%	5.0%	5.0%	
Weight	66.0%	66.0%	66.0%	66.0%	66.0%	
Weighted PY WACC (D)	3.5%	3.4%	3.3%	3.3%	3.3%	
Actual WACC	4.0%	4.0%	4.0%	4.0%	4.0%	
Weight	34.0%	34.0%	34.0%	34.0%	34.0%	
Weighted Actual WACC (E)	1.4%	1.4%	1.4%	1.4%	1.4%	
New weighted WACC (F) = (D+E)	4.9%	4.8%	4.7%	4.7%	4.6%	
Deadband WACC margin (C)	0.3%	0.3%	0.3%	0.3%	0.3%	
New WACC (G) = (F+C)	5.2%	5.1%	5.0%	5.0%	4.9%	5.0%
New Cost of Capital	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**	**Average/Sum**
RAB	13,791	13,791	13,799	13,693	13,511	
New WACC (G, 1yr offset)	5.6%	5.2%	5.1%	5.0%	5.0%	
New CoC (H)	771	712	700	687	672	
Settlement Price/Pax	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**	**Average/Sum**
New cost of capital (H)	771	712	700	687	672	
Other revenues & costs	789	733	701	683	671	
New required revenue	1,560	1,445	1,401	1,370	1,343	
Passengers (m)	70.8	71.0	71.7	72.5	73.2	
New charge/pax (£)	22.0	20.3	19.5	18.9	18.3	Average = 19.8
Difference required revenue	**(1)**	**(60)**	**(73)**	**(80)**	**(85)**	**Sum = (299)**
Difference charge/pax	**(0.0)**	**(0.8)**	**(1.0)**	**(1.1)**	**(1.2)**	**Average = (0.8)**

[1] The deadband WACC recalculates the pre-tax WACC using the Q6 regulatory settlement inputs for all variables except gearing, where the deadband gearing of 65% is introduced.

Gearing sharing mechanisms – options

B. Calculations of behind illustrative examples - Option 2b : Adjustment to the cost of capital (control period reset)

	Q6 Settlement				
Q6 Settlement Price/Pax	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**
Cost of Capital	772	772	773	767	757
Other revenues & costs	789	733	701	683	671
Required revenue	1,561	1,505	1,474	1,450	1,428
Passengers (m)	70.8	71.0	71.7	72.5	73.2
Charge/pax (£)	22.0	21.2	20.6	20.0	19.5
Q6 Cost of Capital	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**
RAB	13,791	13,791	13,799	13,693	13,511
Old pre-tax WACC (%)	5.6%	5.6%	5.6%	5.6%	5.6%
Old Cost of Capital	772	772	773	767	757
Q6 WACC inputs	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**
Gearing	60.0%	60.0%	60.0%	60.0%	60.0%
Tax rate	20.2%	20.2%	20.2%	20.2%	20.2%
Asset beta	0.50	0.50	0.50	0.50	0.50
Real risk free rate	1.0%	1.0%	1.0%	1.0%	1.0%
Equity risk premium	5.8%	5.8%	5.8%	5.8%	5.8%
Cost of debt	3.2%	3.2%	3.2%	3.2%	3.2%
Cost of equity	7.3%	7.3%	7.3%	7.3%	7.3%
Existing pre-tax WACC	5.6%	5.6%	5.6%	5.6%	5.6%

	Q6 Settlement (Restated w/ Adjustment)					
Deadband WACC margin	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**	**Average**
Q6 Pre-tax WACC (A)	5.6%	5.6%	5.6%	5.6%	5.6%	
Deadband gearing	65%	65%	65%	65%	65%	
Deadband WACC[1] (B)	5.3%	5.3%	5.3%	5.3%	5.3%	
Deadband WACC margin (C)=(A-B)	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
New WACC	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**	**Average**
Actual Gearing	84.5%	84.9%	85.4%	85.4%	85.7%	85.2%
Tax rate	20.2%	20.2%	20.2%	20.2%	20.2%	20.2%
Asset beta	0.50	0.50	0.50	0.50	0.50	0.50
Real risk free rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Equity risk premium	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%
R(u) - unlevered cost of equity	N/A	N/A	N/A	N/A	N/A	3.9%
Cost of debt	3.9%	3.5%	2.0%	2.3%	3.5%	3.0%
Cost of equity	N/A	N/A	N/A	N/A	N/A	7.7%
Actual pre-tax WACC	N/A	N/A	N/A	N/A	N/A	4.0%
Weight actual WACC (%)	N/A	N/A	N/A	N/A	N/A	50%
New weighted WACC	N/A	N/A	N/A	N/A	N/A	4.7%
Deadband WACC margin (C)	N/A	N/A	N/A	N/A	N/A	0.3%
New WACC (D)	N/A	N/A	N/A	N/A	N/A	5.0%

	Q6 Settlement (Restated w/Adjustment)					
New Cost of Capital	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**	**Average/Sum**
RAB	13,791	13,791	13,799	13,693	13,511	
New WACC (D)	5.0%	5.0%	5.0%	5.0%	5.0%	
New CoC (E)	683	683	684	679	670	
Settlement Price/Pax	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**	**Average/Sum**
New cost of capital (E)	683	683	684	679	670	
Other revenues & costs	789	733	701	683	671	
New required revenue	1,472	1,416	1,385	1,362	1,341	
Passengers (m)	70.8	71.0	71.7	72.5	73.2	
New charge/pax (£)	20.8	19.9	19.3	18.8	18.3	Average = 19.4
Difference required revenue	(89)	(89)	(89)	(88)	(87)	Sum = (442)
Difference charge/pax	(1.3)	(1.2)	(1.2)	(1.2)	(1.2)	Average = (1.2)

[1] The deadband WACC recalculates the pre-tax WACC using the Q6 regulatory settlement inputs for all variables except gearing, where the deadband gearing of 65% is introduced.

Gearing sharing mechanisms – options

B. Calculations of behind illustrative examples - Option 3b: True-up – Adjustment to regulated passenger charge (offset of prior CP financial outperformance) & Adjustment to the cost of capital (control period reset)

	Q6 Settlement				
Q6 Settlement Price/Pax	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**
Cost of Capital	772	772	773	767	757
Other revenues & costs	789	733	701	683	671
Required revenue	1,561	1,505	1,474	1,450	1,428
Passengers (m)	70.8	71.0	71.7	72.5	73.2
Charge/pax (£)	22.0	21.2	20.6	20.0	19.5
Q6 Cost of Capital	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**
RAB	13,791	13,791	13,799	13,693	13,511
Old pre-tax WACC (%)	5.6%	5.6%	5.6%	5.6%	5.6%
Old Cost of Capital	772	772	773	767	757
Q6 WACC inputs	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**
Gearing	60.0%	60.0%	60.0%	60.0%	60.0%
Tax rate	20.2%	20.2%	20.2%	20.2%	20.2%
Asset beta	0.50	0.50	0.50	0.50	0.50
Real risk free rate	1.0%	1.0%	1.0%	1.0%	1.0%
Equity risk premium	5.8%	5.8%	5.8%	5.8%	5.8%
Cost of debt	3.2%	3.2%	3.2%	3.2%	3.2%
Cost of equity	7.3%	7.3%	7.3%	7.3%	7.3%
Existing pre-tax WACC	5.6%	5.6%	5.6%	5.6%	5.6%

	Q6 Settlement (Restated w/Adjustment)					
Deadband WACC margin	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**	**Average**
Q6 Pre-tax WACC (A)	5.6%	5.6%	5.6%	5.6%	5.6%	
Deadband gearing	65%	65%	65%	65%	65%	
Deadband WACC[1] (B)	5.3%	5.3%	5.3%	5.3%	5.3%	
Deadband WACC margin (C)=(A-B)	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
New WACC	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**	**Average**
Actual Gearing	85%	85%	85%	85%	86%	85.2%
Tax rate	20.2%	20.2%	20.2%	20.2%	20.2%	20.2%
Asset beta	0.50	0.50	0.50	0.50	0.50	0.50
Real risk free rate	1.00%	1.00%	1.00%	1.00%	1.00%	1.0%
Equity risk premium	5.75%	5.75%	5.75%	5.75%	5.75%	5.8%
R(u) – unlevered cost of equity	N/A	N/A	N/A	N/A	N/A	3.9%
Cost of debt	4%	3%	2%	2%	3%	3.0%
Cost of equity	N/A	N/A	N/A	N/A	N/A	7.7%
Actual pre-tax WACC	N/A	N/A	N/A	N/A	N/A	4.0%
Weight actual WACC (%)	N/A	N/A	N/A	N/A	N/A	50.0%
New weighted WACC	N/A	N/A	N/A	N/A	N/A	4.7%
Deadband WACC margin (C)	N/A	N/A	N/A	N/A	N/A	0.3%
New WACC (D)	N/A	N/A	N/A	N/A	N/A	5.0%
New Cost of Capital	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**	**Average**
RAB	13,791	13,791	13,799	13,693	13,511	
New WACC (D)	5.0%	5.0%	5.0%	5.0%	5.0%	
New CoC (E)	683	683	684	679	670	

[1] The deadband WACC recalculates the pre-tax WACC using the Q6 regulatory settlement inputs for all variables except gearing, where the deadband gearing of 65% is introduced.

[2] Makes the implicit assumption that Q6 Restated follows Q6 As-Is (for illustrative purposes).

Gearing sharing mechanisms – options

B. Calculations of behind illustrative examples - Option 3b: True-up – Adjustment to regulated passenger charge (offset of prior CP financial outperformance) & Adjustment to the cost of capital (control period reset) (cont'd)

	Q6 Settlement (Restated w/Adjustment)					
True-up calculation	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**	**Average/Sum**
Actual gearing	84.50%	84.90%	85.40%	85.40%	85.70%	
Reference gearing	65.00%	65.00%	65.00%	65.00%	65.00%	
Difference in gearing (min is nil) (F)	19.50%	19.90%	20.40%	20.40%	20.70%	
New Cost of equity	7.7%	7.7%	7.7%	7.7%	7.7%	
Less: Actual cost of debt	-3.9%	-3.5%	-2.0%	-2.3%	-3.5%	
Spread (G)	3.8%	4.3%	5.7%	5.4%	4.3%	
Financial outperformance (%) (H)=(FxG)	0.75%	0.85%	1.17%	1.11%	0.89%	
RAB (I)	13,791	13,791	13,799	13,693	13,511	
Financial outperformance (£m) (J)=(IxH)	103	118	161	151	120	
Sharing rate (K)	50%	50%	50%	50%	50%	
Financial outperformance to be shared (£m) (L)=(KxJ)	52	59	81	76	60	Sum = 327
Settlement Price/Pax	**FY 15**	**FY 16**	**FY 17**	**FY 18**	**FY 19**	**Average/Sum**
New cost of capital (E)	683	683	684	679	670	
Other revenues & costs	789	733	701	683	671	
Benefit from excess[2] (-L, 5yr total spread)	(65)	(65)	(65)	(65)	(65)	
New required revenue	1,407	1,351	1,320	1,296	1,275	
Passengers (m)	70.8	71.0	71.7	72.5	73.2	
New charge/pax (£)	19.9	19.0	18.4	17.9	17.4	Average = 18.5
Difference required revenue	(154)	(154)	(154)	(154)	(153)	Sum = (769)
Difference charge/pax	(2.2)	(2.2)	(2.2)	(2.1)	(2.1)	Average = (2.1)

[1] The deadband WACC recalculates the pre-tax WACC using the Q6 regulatory settlement inputs for all variables except gearing, where the deadband gearing of 65% is introduced.

[2] Makes the implicit assumption that Q6 Restated follows Q6 As-Is (for illustrative purposes).

6 Appendices

C. European approaches to gearing and financeability

Our analysis is based on a review of regulatory publications covering gas TSOs

Regulators in Europe mostly use notional gearing levels to set the capital structure, however there is significant variance in the level of assumed debt

Country	Gearing method	Most recent gearing level	Financeability assessments
Austria	Notional	60	None
Belgium	Notional	67	None
Bulgaria	Actual	0	–
Croatia	Notional	50	None
Czech Republic	Notional	38	None
Denmark	Actual	–	None
Estonia	Notional	50	None
Finland	Notional	40	None
France	Notional	50	None
GB	Notional	62.5	Yes, multiple methods, and possible introduction of cashflow floor
Germany	Notional	60	None
Greece	Actual	22	None
Hungary	Notional	53	None
Ireland	Notional	55	Yes, including gearing benchmark
Italy	Notional	44.4	–
Latvia	Notional	50	None
Lithuania	Notional	70	Yes, including gearing, with review of WACC if not deemed to be financeable
Luxembourg	Notional	50	None
Netherlands	Notional	50	–
Northern Ireland	Notional	65	Yes, as part of price control review
Poland	Notional	30	None
Portugal	Notional	50	None
Romania	Notional	33	None
Slovakia	Not used – tariff benchmarking used to assess costs annually		None
Slovenia	Notional	60	None
Spain	Not used – financial compensation rate determined from gov bond yields		None
Sweden	Notional	47	None

Sources:

ACER's Methodologies and parameters used to determine the allowed or target revenue of gas transmission system operators (TSOs)

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