

Agenda

Advancing economics in business

Debt in depth: the cost of debt in regulatory determinations

The February 2013 *Agenda* article, 'What WACC for a crisis?', considered the regulatory assumptions for equity returns set by regulators. The series continues by looking at the cost of debt, a key component of the allowed WACC. Regulators tend to adopt a wide range of approaches that often result in a departure from the actual rate paid by companies on their debt, depending on the desired incentive and risk properties of the approach

The cost of debt forms a significant part of the cost of capital allowance for regulated companies. In its recent gas distribution review, Ofgem, the energy regulator for Great Britain, attached a 65% weight to the cost of debt (based on the regulator's notional gearing assumption), and in most UK regulated sectors that weight is at least 50%.

The cost of debt represents the cost incurred by a company in compensating its creditors. Unlike the cost of equity, which is not directly observable, the historical cost of debt can be easily derived from financial statements: it can be estimated by computing the ratio of the interest expenses to the current and long-term debt balances. Alternatively, debt capital markets provide a useful measure of the return required by investors on a company's bonds.

To compensate companies for the financing costs incurred on their borrowings, regulators may use one of two main approaches:

- the cost of debt allowance can be set to cover the actual cost paid by a company on its borrowings. This is often referred to as the 'embedded debt' approach;
- the allowance can be set according to market rates—ie, the expected cost of debt as evidenced by market yields on bonds issued by other corporations that are similar in terms of their sector or credit rating.

Married to market, or wedded to embedded?

Fortunately, a stark choice between these two extremes is unnecessary, and regulators rarely adopt either approach in its pure form.

For example, in its 2012 charge control review for telecommunications services, Ofcom, the UK communications regulator, estimated the debt premium 'by reference to the yield on BT's 2016 sterling denominated bond'.¹ While at first sight this resembles an embedded debt approach, the following aspects suggest that the distinction is not so clear-cut:

- the approach captures the current market yield on the bond rather than the actual cost paid by BT, which is based on the interest coupon paid relative to the amount borrowed (taking into account any fees incurred in issuing the bond);
- the 2016 bond referred to in the Ofcom decision represents less than 10% of BT's total loans and borrowings—a pure embedded debt approach would also take into account BT's other bonds (including those denominated in euros and US dollars), commercial papers, bank overdrafts and other loans, along with any hedging instruments that affect the total cost paid.²

In the energy sector, Ofgem relies on corporate bond indices to estimate the cost of debt.³ Again, although such an approach may appear at first glance to fall in the 'market' category, Ofgem argues that this approach provides 'adequate coverage for network companies under a range of scenarios', while recognising that the extent to which it does so depends on several factors, including the timing, frequency and cost of previous issuances.⁴

These examples illustrate that regulatory precedents can be described according to whether their cost of debt allocation is informed by company-specific data or general market data. Another way to break down the

issue is to consider whether the allowed cost of debt is meant to represent the cost of new debt only, or both existing and new debt.

When new becomes old

A cost of debt approach can also be described with reference to existing versus new debt. Ofwat made this distinction explicit in the 2009 water price control review:

We have factored into this assessment the mix of existing debt that will remain in place over 2010-15, together with the new financing and refinancing requirement.⁵

If market rates were constant over time, such a distinction would be irrelevant, as new debt would cost the same as embedded debt. In reality, however, market yields on debt issued by corporates fluctuate over time (see Figure 1 below), and hence the issuance of new debt will tend to affect the average cost paid by a company on all its debt.

To illustrate this, suppose that a company's cost of embedded debt is 5%, and that, at the time of the price review, market rates are at 3%. What rate should be allowed to compensate the company for the cost of debt during the following five-year period?

Well, as economists like to say, it depends. Only if all of the company's existing debt remains outstanding, and no new debt is issued during the period, will a regulatory allowance of 5% cover the company's cost of debt during the whole period. Similarly, only if the company refinances all of its existing debt at today's rate will the 3% rate be representative of its costs during the period.

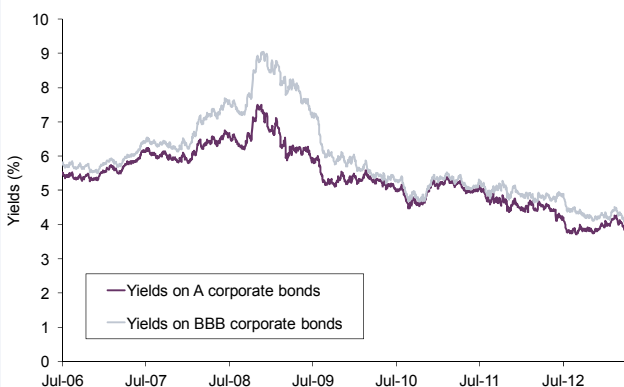
Which of the two is closest to the actual cost during the period depends on how much new debt will be issued, and at what cost. As shown in Figure 2, even large

differences in market rates (eg, 2% above or below the cost of embedded debt) would not affect the company's average cost of debt over the period if little new debt is issued. For example, this could be the case for networks that do not expect to grow significantly in the near future (in which case the need to finance new capital expenditure is limited), and if the existing debt does not need to be refinanced during the period. Figure 2 shows that, for such a network, the average cost of debt during the regulatory period remains quite close to the company's cost of embedded debt in year zero. (In this example, the company's average cost of debt is 20bp higher or lower than the cost of embedded debt in year 0.)

The difference begins to be amplified if some of the existing debt is refinanced during the period. Figure 3 overleaf shows the effect of refinancing 5% of the existing debt each year during the period: the average cost of debt over the period is more affected by market rates, but is still relatively close to the initial cost of embedded debt (averaging 40bp higher or lower than the cost of embedded debt in year 0).

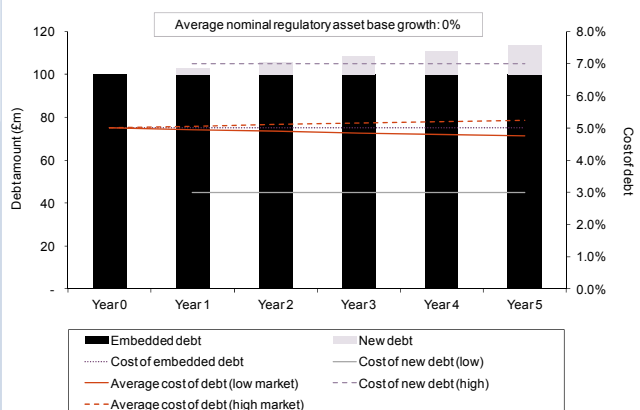
A different picture emerges when asset growth is introduced, as illustrated in Figure 4 overleaf. For growing networks with significant financing requirements, the average cost of debt during the period can be expected to evolve away from the initial cost of embedded debt and towards the prevailing market rates. In Figure 4 the average cost of debt during the period is 80bp higher or lower than the initial cost of embedded debt, and, in the last year, new debt issued during the price control period makes up around 60% of the company's total debt.

Figure 1 Market yields on corporate debt over time



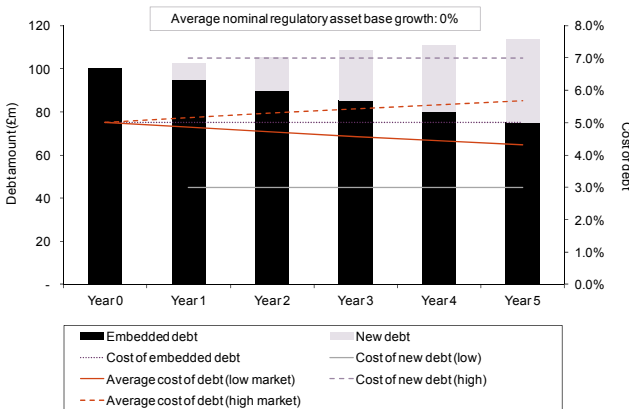
Note: Iboxx index of corporate non-financial bonds (all maturities). Source: Datastream.

Figure 2 Average cost of debt for a stable network (no refinancing)



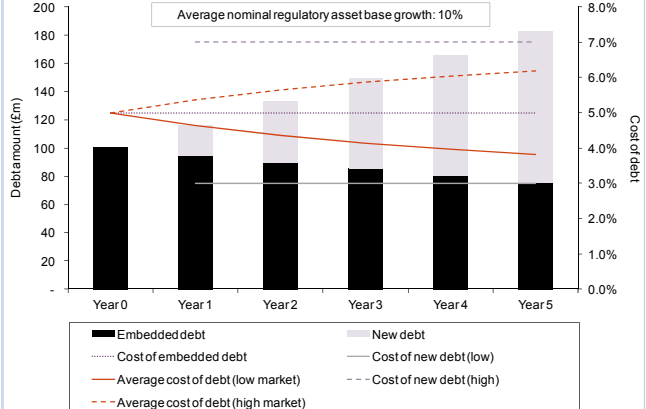
Note: The figure assumes that new debt is issued only to finance additional investments into the network, not to refinance existing debt. Half of the additional investments into the network, which are assumed to exactly offset the depreciation of existing assets, are financed with debt at a cost equal to the current market rates (ie, at 3% for the solid lines, and 7% for the dashed lines). For simplicity, inflation is assumed to be zero. Source: Oxera.

Figure 3 Average cost of debt for a stable network (some refinancing)



Note: The figure assumes that new debt is issued both to finance additional investments into the network and to refinance part of the embedded debt that matures during the period. The same assumptions as in Figure 1 hold for the financing of new investments into the network. In addition, 5% of the existing embedded debt is assumed to be refinanced each year at market rates. For simplicity, inflation is assumed to be zero. Source: Oxera.

Figure 4 Average cost of debt for a growing network (some refinancing)



Note: The figure assumes that new debt is issued both to finance additional investments into the network and to refinance part of the embedded debt that matures during the period. The same assumptions as in Figure 2 hold for the refinancing of existing embedded debt. In addition, half of the additional investments into the network, which are assumed to result in an average annual asset growth of 10%, are financed with debt at a cost equal to the current market rates. For simplicity, inflation is assumed to be zero. Source: Oxera.

Which sectors are best characterised by these illustrations? Some sectors, such as gas distribution, have low regulatory asset base (RAB) growth and hence might be best characterised by Figure 2 or Figure 3 (assuming low refinancing requirements).⁶ Others, such as energy transmission, have higher RAB growth, making Figure 4 a closer representation of what might happen to their cost of embedded debt over time.⁷

What it all boils down to

As with other aspects of incentive regulation, the incentives and risk properties of the options play a key role in the selection of a cost of debt approach.

First, consider existing debt. On the one hand, an embedded debt approach can be consistent with the financing duty, which is common to most UK regulated sectors.⁸ This is because the approach explicitly factors the company's actual borrowing costs into the price control.⁹ The incentive properties of an embedded debt approach can vary: full pass-through of incurred debt costs would be associated with weaker incentives, while these incentives could be strengthened by conducting an efficiency assessment of the company's existing debt. The risk implications would also vary accordingly, with full pass-through of embedded debt cost being less risky for the company.

Second, there is the question of how to compensate for the cost of new debt to be issued during the price control. Both the Ofwat and Ofgem approaches noted above take account of market rates for new debt,

although in different ways: Ofwat's approach is based on market rates at the onset of the price control period (ie, an ex ante approach), while Ofgem's is updated during the price control period based on a pre-determined indexation formula that applies to all debt (rather than to new debt only).

This raises the question of how market rates will evolve during the price control period: is it more appropriate to give a premium to allow for the possibility of rates increasing (akin to the observed trend of regulatory decisions on the risk-free rate highlighted in Oxera's previous *Agenda* article¹⁰); to index the allowance in a way that reduces the risk to the company; or to set a fixed allowance with no premium, in such a way that the company would be fully exposed to fluctuations in market rates?

Importantly, the risk attributes of a cost of debt approach will also affect the risk to equity investors, who are residual claimants to the company's cash flows (after interest payments). When deciding on an approach for the cost of debt, it is therefore important to consider the possible effects on the cost of equity.

Another important consideration is to what extent the actual features of a company's borrowing should be reflected in the regulatory determination for the cost of debt. Regulatory determinations on the cost of capital typically involve a judgement about the capital structure that is consistent with a target credit rating—the 'notional' capital structure. Under a notional approach, the meaning of 'embedded' becomes blurred. This raises several questions:

- does the regulator take into account only the cost of bonds, or also the cost of bank loans and credit facilities?
 - what about the mix of nominal debt relative to debt that is index-linked?
 - how should debt that is issued in different currencies be treated, or hedging instruments that are used by a company's treasury as a way to manage its exposure to various risks?
 - how relevant is the debt issued by a large group, when the objective is to determine an allowance for the subset of the group that is regulated?
 - what about the tax implications? Should companies be allowed to retain any tax savings that flow from differences between the actual and notional interest expenses?
- in practice, regulators adopt a wide range of approaches for the cost of debt allowance, assigning varying weights to two overarching approaches (ie, embedded debt versus market) and considerations about how existing debt and new debt are treated;
 - the precise regulatory approach is ultimately determined by a regulator's duties and desired incentive and risk outcomes, which will also affect the weight attributed to several 'real-life' aspects that are relevant to the actual cost of debt for a company, but which may be abstracted away when setting allowed tariffs.

For each of these questions, one could point to diverging regulatory precedents; the approach adopted depends on the specific regulatory duties and desired incentive and risk outcomes.

Putting things into perspective

Three main points arise from the above discussion:

- the evolution of companies' actual cost of debt during a price control period depends on several factors, some of which are within a company's control (eg, the maturity profile of existing debt and financing policy), and others less so (eg, market rates and investment requirements);

In the end, it is important to put things into perspective. After all, extensive consideration and debate would not be warranted if the impact were negligible. For companies, changes in the cost of debt can have important monetary effects: for instance, a 1% change in the cost of debt allowance could affect National Grid Electricity Transmission's revenues by £90m annually during the next price control period (2013 to 2021), or close to 5% of the company's allowed revenue over that period.¹¹

Future *Agenda* articles will continue the series with a review of other WACC parameters and precedents for setting other revenue components for regulated industries. The next article will look at how regulators have determined the beta parameter when estimating the cost of equity.

¹ Ofcom (2012), 'Charge Control Review for LLU and WLR Services', March 7th, annex 8, p. 132.

² BT 2012 Financial Statements, Note 24, p. 140.

³ For example, in Ofgem's RIIO T1 decision, the cost of debt estimate is based on the iBoxx corporate bond index. See Ofgem (2012), 'RIIO-T1: Final Proposals for National Grid Electricity Transmission and National Grid Gas', December 17th, pp. 25–6.

⁴ Ofgem (2013), 'Strategy Decision for the RIIO-ED1 Electricity Distribution Price Control', March 4th, p. 13, paras 2.31–2.32.

⁵ Ofwat (2009), 'Future Water and Sewerage Charges 2010-15: Final Determinations', November, Chapter 5, p. 130.

⁶ Ofgem (2012), 'RIIO-GD1: Final Proposals: Finance and Uncertainty Supporting Document', December 17th, Table 2.5, p. 10.

⁷ For example, the two National Grid and two Scottish energy networks are expected to grow annually by 6% and 13%, respectively, in real terms over the next price control period. Ofgem (2012), 'RIIO-T1: Final Proposals for National Grid Electricity Transmission and National Grid Gas', December 17th, Tables 2.3 and 2.5, pp. 8–9; Ofgem (2012), 'RIIO-T1: Final Proposals Update Letter in Respect of the Statutory Consultation on the Licence Modifications for SP Transmission Ltd and Scottish Hydro Electric Transmission Plc', December 21st, Appendix 1.

⁸ For example, in its ongoing regulatory review, Ofwat stated: 'We must ensure that our future approach to financeability is consistent with our primary duties to protect consumers' interests and to secure that efficient companies can finance their functions.' See Ofwat (2011), 'Financeability and Financing the Asset Base: a Discussion Paper', March, p. 3.

⁹ It is difficult to achieve a perfect match between the regulatory allowance and debt costs, because of the approach to inflation in several sectors, whereby the regulatory allowance is based on a real cost of capital and an indexed asset value. The regulatory allowance for the cost of debt will therefore understate the actual cost of debt paid by companies on nominal bonds.

¹⁰ Oxera (2013), 'What WACC for a Crisis?', *Agenda*, February.

¹¹ Based on regulatory asset value information published by Ofgem, a 60% notional gearing assumption, historical RPI inflation data as published by the Office of National Statistics, and an inflation assumption of 2.5% from 2013 onwards. See ONS website: www.statistics.gov.uk/; and Ofgem (2012), 'RIIO-T1: Final Proposals for National Grid Electricity Transmission and National Grid Gas', Table 7.1, p. 55.

If you have any questions regarding the issues raised in this article, please contact the editor, Dr Leonardo Mautino: tel +44 (0) 1865 253 000 or email l_mautino@oxera.com

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- why is the economy stalling, and what can be done? *Chris Riley, Oxera Associate*

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