RIIO-GD1 Initial Proposals: options to reduce risk under debt indexation

Note prepared for Wales & West Utilities

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1 Introduction and key findings

In its Initial Proposals for the next gas distribution price control (RIIO-GD1), Ofgem proposes that the cost of debt allowance be updated annually based on movements in the simple ten-year trailing average of the market cost of debt.[1] This approach will apply to all gas distribution networks (GDNs) equally.

The aim of debt indexation is to reduce the risk of error in the estimate of the efficient cost of debt over the price control period, and, hence, lessen the likelihood of setting the 'wrong' cost of capital.

However, some of the specific characteristics of the GDNs, and of Wales & West Utilities (WWU) in particular, mean that in its proposed current form debt indexation increases rather than reduces the risk of under-recovery of efficiently incurred debt costs compared with a fixed cost of debt allowance. Some of these characteristics, such as the relatively small size of the asset base and near-zero projected asset growth, are fundamental in nature, and their impact on cost of debt risk cannot be easily eliminated over time.

Moreover, from the perspective of the consumer, setting charges according to a variable cost of debt allowance when the efficiently incurred cost of debt for WWU is likely to be fairly static over RIIO-GD1 represents unnecessary exposure for the consumer to the risk of increases in interest rates.

Notwithstanding the likely permanent increase in risk for both consumers and WWU, in order to ensure that debt indexation does indeed reduce the risk of error in the cost of debt for WWU—as intended in the RIIO model—it would be appropriate to implement a transitional mechanism, at least for the RIIO-GD1 period. This note reviews the options for such a mechanism that Ofgem could consider.

[1] Ofgem (2012). 'RIIO-GD1: Initial Proposals', Supporting document—finance and uncertainty, July 27th.

One suitable option would be to set the cost of debt allowance using a collar mechanism. The analysis in this note suggests that a cap and a floor of approximately ±20bp would be appropriate, with a midpoint equal to the central estimate of the efficient cost of debt at the start of RIIO-GD1. Such a collar mechanism is likely to achieve the RIIO objective of reducing the risk of error in the cost of debt compared with a fixed cost of debt allowance. The collar would protect consumers against large increases in the cost of debt, and increase the probability that WWU will be able to finance its functions. Although the proposed design of the collar reflects the specific characteristics of WWU, the general principles can be applied to other GDNs in similar circumstances.

An alternative option could be to modify the index weighting. A bespoke formula that places relatively little weight on new data and reflects the expected debt-raising profile of WWU would also reduce the risk of error in the cost of debt compared with a fixed cost of debt allowance. However, such an index would be relatively complex to implement and, depending on the starting value of the index, could lead to under-recovery of WWU's existing debt costs. This in turn could undermine the financeability of the RIIO-GD1 proposals.

Therefore, for RIIO-GD1, a collar mechanism is likely to be a more appropriate means to mitigate risk and improve financeability.

2 Impact of the proposed debt indexation on WWU

To recognise the asymmetric consequences of the risk of the companies' cost of capital being either above or below the regulatory allowance during the price control period, UK regulators, including Ofgem, have tended to set the fixed cost of capital allowance above the central estimate of the cost of capital derived from market data. For the cost of debt, this has led to the allowed cost of debt being set above the central estimate of the efficient cost of debt. In the energy sector, this margin ('headroom') was historically around 30bp.

By annually updating the allowed cost of debt for movements in the market cost of debt, debt indexation is intended to reduce the risk of error in the estimate of the cost of debt, and hence reduce the need to set the allowance above the central estimate.

The extent to which the indexed allowance reflects the actual cost of debt of a typical energy network is a function of several factors. As noted in the RIIO-GD1 Initial Proposals, these include the timing and frequency of debt issuance, the coupon on the bonds relative to the market cost of debt, average maturity, and the credit rating.[2]

Since the indexed allowance will be based on a simple ten-year trailing average of the market cost of debt, the allowance will converge to the actual cost of debt only if every year the company issues bonds of ten-year maturity to the value of one-tenth of its total debt at exactly the annual average of the real market cost of debt.

These assumptions are particularly non-representative of a small company such as WWU. The issues that debt indexation creates for WWU can be separated as follows:

– issues that could potentially reduce over time through a transition in the financing strategy of WWU;
– issues that are due to the fundamental characteristics of the business of WWU, and hence will persist for control periods beyond RIIO-GD1.

– **Transitional issue 1**—WWU's existing debt, like that of most network companies, consists of long-maturity fixed-rate bonds. The weighted average maturity of WWU

[2] Ofgem (2012). op. cit., p. 19.

bonds is 16 years and only 14.7% of existing debt will be refinanced in RIIO-GD1. Most of the existing bond debt was raised in 2009–10 in order to refinance the bank debt used to fund the acquisition of WWU from National Grid in 2005.[3] Issuing fixed-rate long-term bonds reflected an efficient financing choice based on the nature of the assets and the regulatory regime in place at the time.

– **Persistent issue 1**—WWU has virtually no requirements to issue new debt in RIIO-GD1 owing to near-zero real RAV growth over the period (0.4%).[4] Combined with low refinancing requirements, this means that the actual cost of debt over the period will be relatively insensitive to movements in the market cost of debt.

– **Persistent issue 2**—with forecast nominal RAV of about £1.8 billion at the start of RIIO-GD1 (April 1st 2013), WWU is a relatively small network. Therefore, under reasonable RAV growth scenarios, it would not be efficient for WWU to access bond markets annually, as this would require bonds to be issued that are inefficiently small in value.

Given these characteristics, a cost of debt allowance that is updated annually will increase, rather than reduce, the risk of underestimating the cost of debt over the price control period compared with a fixed cost of debt allowance. In other words, the RIIO-GD1 approach to setting the cost of debt allowance represents higher risk for WWU than the GDPCR1 approach.[5] Moreover, from the perspective of the consumer, setting charges according to a variable cost of debt allowance when the efficiently incurred cost of debt for WWU is likely to be fairly static over RIIO-GD1 represents unnecessary exposure for the consumer to the risk of increases in interest rates.

Any deviations between allowed and actual cost of debt are borne by equity holders, as the residual claimants of the firm. In GDPCR1, by setting the cost of debt above the central estimate, equity holders were compensated for the risk of a mismatch between the allowance and the actual cost of debt. The RIIO-GD1 cost of debt allowance no longer includes such a margin. However, for WWU, the increased risk of a mismatch between the allowance and the actual cost of debt under indexation compared with a fixed cost of debt allowance (as measured by the increase in the normalised standard deviation) implies that, not only should a margin in the required rate of return be retained, but, in fact, it needs to be increased.

The risk consequences of debt indexation for WWU appear to contradict the principle behind the introduction of debt indexation in the first place; namely, to reduce, rather than increase, the risk of error in estimating the cost of capital:[6]

> Our approach, under the RIIO model, is to extend the concept of regulatory commitment to the estimation of the cost of debt...We...believe that such an approach will mean a higher likelihood of getting the WACC 'right' thus leading to better investment decisions by companies.

To ensure that debt indexation does indeed reduce the risk of error in the cost of debt for WWU—as intended in the RIIO model—it would be appropriate to modify the debt indexation mechanism so as to reduce the risk of under-recovery of efficiently incurred debt costs, and to reduce the exposure of consumers to increases in interest rates.

[3] Wales & West Utilities (2011), 'RIIO-GD1 Business Plan 2013-2011', Part B2, Financeability, November.

[4] Based on data supplied by WWU which reflects RAV projections from the Initial Proposals.

[5] In a previous Oxera note for WWU, the increase in risk was shown quantitatively. See Oxera (2011), 'What is the link between debt indexation and allowed returns? Scenario prepared for Wales & West Utilities', October 14th.

[6] Ofgem (2010), 'Handbook for implementing the RIIO model', October 4th, p. 108.

3 Options to reduce risk

Under the current debt indexation proposals, WWU might be incentivised to adjust its financing strategy to reduce its risk relative to the debt index over time. However, the scope for such adjustment in RIIO-GD1 is limited.

Reducing the risk under the index would require bonds to be issued more frequently and in smaller size. The forecast for total debt issuance over RIIO-GD1 is around £650m.[7] To improve the match between the index and the actual cost of debt would require issuing bonds of around £80m annually in RIIO-GD1, whereas in the past WWU's average issue size was about £200m.

Some transaction costs associated with issuing debt, such as broker, legal and credit rating agency fees, are likely to be largely fixed. Issuing debt in such small sizes is likely to lead to a substantial increase in transaction costs as a proportion of the bond value. Furthermore, the new issue premium is likely to increase as compensation for lower liquidity in the secondary market. Under the currently proposed implementation of debt indexation there is no way to capture an increase in transaction costs. Therefore, for WWU, adjusting its financing policy in RIIO-GD1 to reduce risk is likely to be prohibitively expensive. Additionally, considering the size of new debt requirements relative to the existing debt, such adjustments, even if feasible, would lead to only a marginal reduction in risk.

In future price control periods, once some of the existing debt has matured, more effective adjustments to financing strategy to reduce risk might potentially be possible. Nevertheless, the small asset base and low asset growth will limit the extent to which risk can be reduced since the 'efficient debt issue size' will remain an obstacle.

Furthermore, no company issues debt on a frequent, uniform and regular basis. This means that all the GDNs, including WWU, will remain exposed to the risk that the cost of new debt will be different to the annual average that goes into Ofgem's calculation. In addition, there may be a limit to how much index-linked debt the GDNs can issue. These factors can also contribute to the mismatch between the real cost of debt that a company is able to secure (eg, via inflation swaps) and the real cost of debt allowance.

Therefore, in assessing the impact of any proposals for the debt allowance on risk and financeability, it is important to consider how intra-year cost of debt volatility and hedging arrangements, such as inflation swaps, may affect actual network financing costs. The possibility of a mismatch between actual and allowed cost of debt due to these two factors is no more effectively removed under debt indexation than under a fixed cost of debt allowance.

Overall, during future price control periods, for WWU, debt indexation is likely to continue to be a higher-risk option than a fixed allowance. Notwithstanding the likely permanent increase in risk, it would be appropriate to implement a transitional mechanism, at least for the RIIO-GD1 period.

An example of a suitable transitional mechanism is to apply a collar to the cost of debt allowance. The collar mechanism proposed by WWU in the updated business plan is discussed in section 3.1.[8]

An alternative transitional mechanism explicitly discussed by Ofgem in its RIIO-GD1 strategy decision is to modify the index weighting. Section 3.2 sets out how such a mechanism could be developed for WWU.

[7] Based on data supplied by WWU.

[8] Wales & West Utilities (2012), 'RIIO-GD1 Business Plan 2013-2011', Part B2 Addendum, Financeability, April.

3.1 Applying a collar mechanism

Under a collar mechanism, the allowance for the cost of debt would be updated annually based on movements in the central estimate of the efficient cost of debt. However, the updating is conditional on the index not exceeding a pre-specified cap or falling below a pre-specified floor. If the central estimate of the efficient cost of debt falls below the floor/rises above the cap, the allowance will be set at the floor/cap level.

The advantage of this mechanism to a company such as WWU, the debt costs of which are largely fixed over the RIIO-GD1 period, is that it will reduce the risk of under-recovery of efficient debt costs. This is because it provides greater protection against a fall in the index, reducing the likelihood of financeability problems, which would be consistent with Ofgem's financing duty.

The advantage to consumers is greater protection against the risk of increases in interest rates. This is because the mechanism avoids unnecessary increases in charges should the index start to rise rapidly, which would be consistent with Ofgem's duty to protect consumer interests.

The collar mechanism is defined by three values: a midpoint, a cap and a floor. It would be appropriate to set the midpoint of the collar at the level of the central estimate of efficient cost of debt at the start of RIIO-GD1, as this is the value that would determine the allowance for the cost of debt for the first year of RIIO-GD1.

In the absence of evidence that the cost of WWU's existing debt is inefficient, it would be appropriate to set the midpoint at a level that ensures WWU's cost of existing debt, inclusive of debt issuance fees, is recoverable. In this context, it is important to take into account the effective real cost of debt of WWU, which reflects the impact of any inflation swaps that WWU may have entered into.

To balance the downside risk of a falling cost of debt allowance versus the risk to consumers of a rapid increase in interest rates, it would seem appropriate to set a symmetrical collar.

The residual exposure to the cost of debt risk under a collar mechanism depends on the width of the collar. All else equal, a wider collar exposes the company to more variation in the allowed cost of debt, and hence, more risk.

As noted in section 2, under the current debt indexation proposals, the residual exposure to cost of debt risk is higher for WWU under indexation than under a fixed cost of debt allowance. Table 3.1 shows how the exposure to the residual cost of debt risk varies with the width of the collar.

Table 3.1 Exposure to residual cost of debt risk under different collar widths

	Standard deviation of return on equity (bp)	% change in standard deviation of return on equity compared with fixed allowance
Fixed allowance	19	–
Indexation	26	40
40bp collar	16	–14
20bp collar	12	–34

Note: The results were produced using the same modelling framework as in a report prepared by Oxera for Energy Networks Association: 'What is the link between debt indexation and allowed returns?', July 2011. This framework uses Monte Carlo analysis to produce distributions of the average return on equity over the price control period under different mechanisms for setting the cost of debt allowance. The mean expected values for the market cost of debt underpinning this analysis were derived using information from market forward rates. All standard deviation figures presented in the table have been rounded.
Source: Oxera.

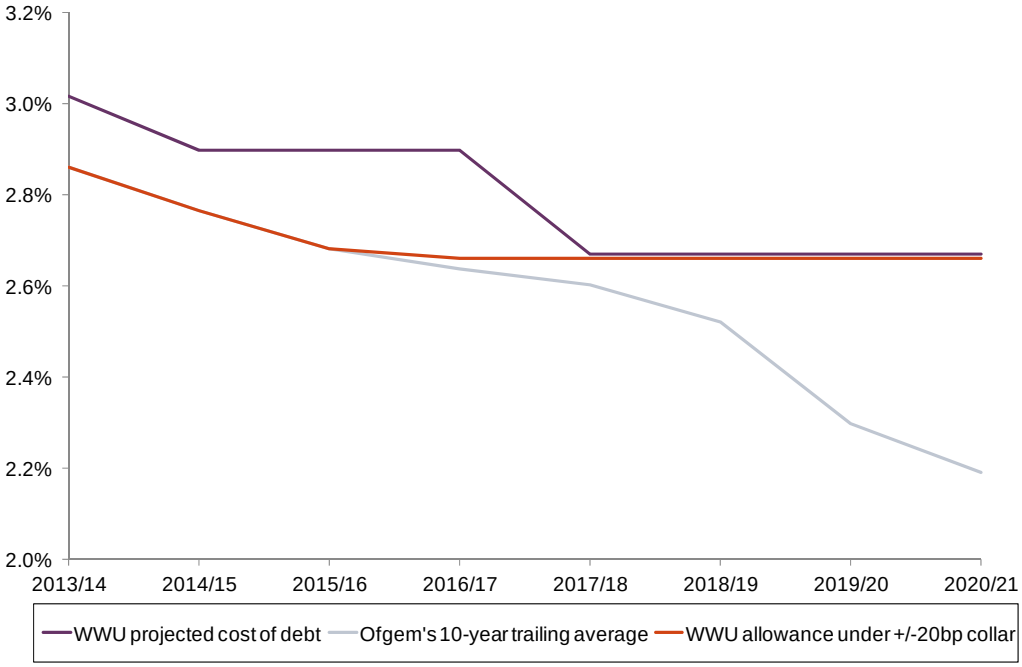
As a minimum, the collar mechanism should leave WWU no worse off than under a fixed cost of debt approach. To be consistent with the RIIO principle of debt indexation, it would be appropriate to choose a collar width that leads to lower risk exposure than would be the case under a fixed cost of debt allowance. As can be seen from Table 3.1, a collar of ±20bp around the midpoint would satisfy this criterion. Under the proposed collar, the standard deviation of equity returns due to uncertainty in the market cost of debt is reduced by about a third (34%) compared with a fixed cost of debt allowance.[9]

Figure 3.1 further illustrates that such a collar would be a considerably closer match for WWU's actual cost of debt (excluding issuance costs) than the ten-year trailing average, and that the risk of under-recovery of efficiently incurred debt costs would be reduced. This scenario is based on the assumption the market cost of debt will stay unchanged at 2.2% throughout RIIO-GD1.[10]

[9] The change in risk is proxied by the change in the standard deviation of the return on equity. To control for changes in the mean expected return on equity under different scenarios, a more technically correct measure of the change in risk is the normalised standard deviation (defined as the standard deviation divided by the mean). The conclusions presented above are robust to this small technical simplification.

[10] This is the 2011–12 average of Ofgem's measure of the real market cost of debt. The scenario of a constant market cost of debt was chosen simply for illustration purposes.

Figure 3.1 WWU's debt costs (excluding issuance costs) against the allowance under the collar and the Ofgem index



Note: Data on the cost of WWU's existing debt was supplied by WWU.
Source: Oxera.

Figure 3.1 uses Ofgem's ten-year trailing average as a proxy for the efficient cost of debt (excluding issuance costs), to illustrate the functioning of the collar mechanism. As the starting value of the Ofgem index is lower than WWU's cost of existing debt at the start of RIIO-GD1, the combination of the ten-year trailing average and the collar mechanism will still be lower than WWU's actual cost of debt for a significant proportion of RIIO-GD1. Moreover, the ten-year trailing average provides zero allowance for either debt issuance costs or the inflation risk premium.[11]

3.2 Modifying the index weighting

Ofgem left an option for companies to propose a weighted averaging mechanism with a transition to a simple ten-year trailing average, if they can show why a ten-year trailing average is not suitable to their circumstances.

This option was put forward in recognition that, for a company with a rapidly growing asset base, a simple ten-year trailing average may provide inadequate protection against rising interest rates in the future. The bespoke weighting scheme adopted for SHETL (one of the fast-tracked electricity transmission companies) takes this into account by putting more weight on more recent data (see Table 3.2).

[11] For more detail on the inflation risk premium, see Oxera (2012), 'RIIO-T1 and GD1 Initial Proposals–Financial Issues', September 18th.

Table 3.2 Formula for SHETL's weighted cost of debt index

Year	Dates	Index	Weighting
1	1/4/13 – 31/3/14	Ofgem trailing average index for year 1	100%
2	1/4/14 – 31/3/15	Ofgem trailing average index for year 2 + Index average for 1/4/13 – 31/10/13	Year 1 opening RAV / Year 1 closing RAV + Year 1 change in RAV / Year 1 closing RAV
3	1/4/15 – 31/3/16	Ofgem trailing average index for year 3 + Index average for 1/4/13 – 31/3/14 + Index average for 1/4/14 – 31/10/14	Year 1 opening RAV / Year 2 closing RAV + Year 1 change in RAV / Year 2 closing RAV + Year 2 change in RAV / Year 2 closing RAV
4	1/4/16 – 31/3/17	Ofgem trailing average index for year 4 + Index average for 1/4/13 – 31/3/14 + Index average for 1/4/14 – 31/3/15 + Index average for 1/4/15 – 31/10/15	Year 1 opening RAV / Year 3 closing RAV + Year 1 change in RAV / Year 3 closing RAV + Year 2 change in RAV / Year 3 closing RAV + Year 3 change in RAV / Year 3 closing RAV
…	…	…	…

Source: Ofgem (2012), 'RIIO-T1: Final proposals for SP Transmission Ltd and Scottish Hydro Electric Transmission', April 23rd, Table 5.2, p. 34.

Such an approach deals with one important factor—significant RAV growth—that affects the tracking error between the allowed cost of debt and the company cost of debt. However, such a weighting scheme will not materially reduce the uncertainty for WWU, for the following reasons.

– The projected annual RAV changes for WWU are small compared with those for SHETL. Applying SHETL's formula to WWU will be almost identical to applying a simple ten-year trailing average.

– A weighting scheme based on RAV additions fails to recognise that WWU will not be issuing debt annually to match the RAV growth profile, owing to the 'efficient debt issue size' discussed above.

– The SHETL formula does not deal with one of the key risk factors for WWU; namely, that most of the existing debt will not be refinanced in RIIO-GD1. In order to reduce the uncertainty for WWU, a bespoke weighting scheme would need to reflect the fact that its cost of debt will be relatively fixed over the price control period, and that new debt issuance will not track the RAV growth profile. Table 3.3 below sets out a formula that could adequately reflect this. Under the proposed formula, the cost of debt allowance is updated in a way that more closely matches WWU's debt-raising profile.

Table 3.3 Proposed formula for WWU's weighted cost of debt index

Year	Dates	Index	Weighting
1	01/04/13–31/03/14	Ofgem trailing average index for year 1	100%
2	01/04/14–31/03/15	Ofgem trailing average index for year 1	(Year 1 opening debt – Year 1 matured debt) /Year 1 closing debt +
		+	
		Index average for 01/04/14–31/10/14	Year 1 new debt/ Year 1 closing debt
3	01/04/15–31/03/16	Ofgem trailing average index for year 1	(Year 1 opening debt – Year 1 matured debt – Year 2 matured debt) /Year 2 closing debt
		+	+
		Index average for 01/04/14–31/10/14	Year 1 new debt/ Year 2 closing debt +
		+	
		Index average for 01/04/15–31/10/15	Year 2 new debt/ Year 2 closing debt
4	01/04/16–31/03/17	Ofgem trailing average index for year 1	(Year 1 opening debt – Year 1 matured debt – Year 2 matured debt – Year 3 matured debt) /Year 3 closing debt
		+	+
		Index average for 01/04/14–31/10/14	Year 1 new debt/ Year 3 closing debt
		+	+
		Index average for 01/04/15–31/10/15	Year 2 new debt/ Year 3 closing debt
		+	+
		Index average for 01/04/16–31/10/16	Year 3 new debt/ Year 3 closing debt
5	...	....	....

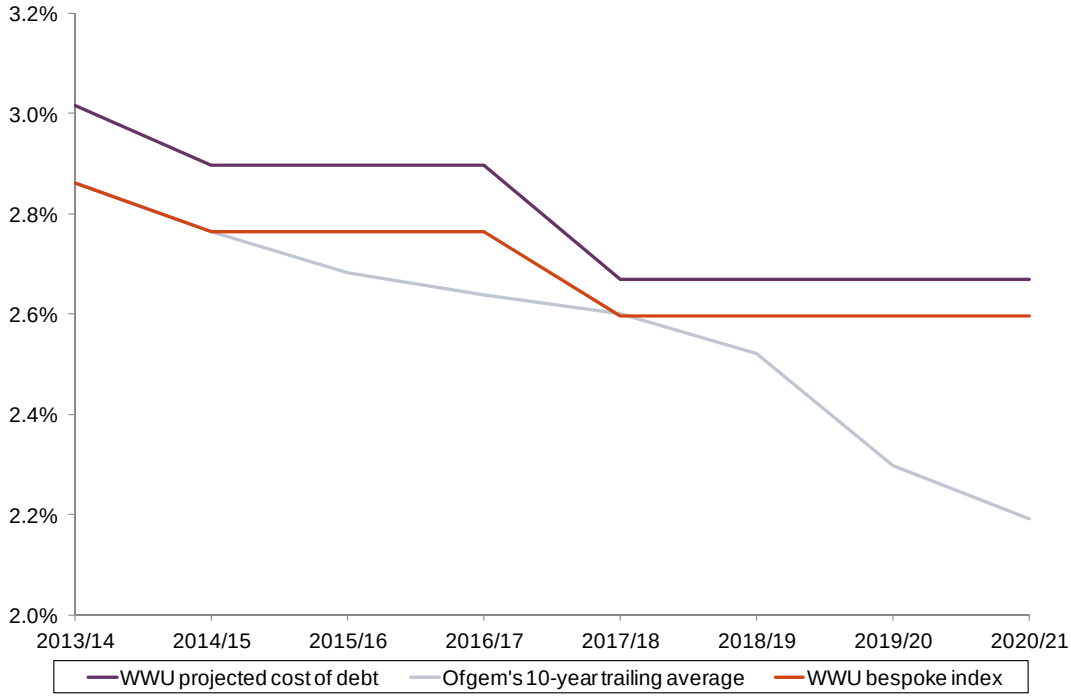
Source: Oxera.

Figure 3.2 below shows that the bespoke index would be a considerably closer match for WWU's actual cost of debt (excluding issuance costs) than the ten-year trailing average, and that the risk of under-recovery of efficiently incurred debt costs would be reduced. Consistent with Figure 3.1, this scenario is also based on the assumption that the market cost of debt will remain unchanged at 2.2% throughout RIIO-GD1.[12]

However, the application of such an index requires assumptions about the timing and size of new debt issuance in RIIO-GD1, as well as potential adjustments for any mismatch between the projected and the actual debt issuance profile. This may introduce unnecessary complexity into the calculation of the index.

[12] This is the 2011–12 average of Ofgem's measure of the real market cost of debt. The scenario of a constant market cost of debt was chosen simply for illustration purposes.

Figure 3.2 WWU's debt costs (excluding issuance costs) against the bespoke index and the Ofgem index



Note: Data on the cost of WWU's existing debt was supplied by WWU.
Source: Oxera.

Although the allowed cost of debt under the bespoke index is a better match to the actual cost of debt than the current proposals, it is consistently below WWU's actual cost of debt (excluding issuance costs) due to a mismatch between the starting value of the Ofgem index and WWU's cost of existing debt at the start of RIIO-GD1. This mismatch arises because Ofgem's index assumes that companies have raised their existing debt evenly over the previous ten years. This is not representative of WWU, which issued debt in only two of the last ten years, with one of those years (2009/10) being characterised by relatively high market cost of debt compared with the ten-year trailing average.

In the absence of evidence that WWU's existing debt profile is inefficient, adopting an index that would lead to under-recovery of efficiently incurred existing debt costs could undermine the financeability of the RIIO-GD1 price control package.

4 Conclusion

The principle behind debt indexation is that it is intended to reduce the risk of error in the estimate of the efficient cost of debt over the price control period, and, hence, lessen the likelihood of setting the 'wrong' cost of capital.

However, the fundamental characteristics of WWU, such as the relatively small size of its asset base and near-zero projected asset growth, mean that debt indexation increases, rather than reduces, the risk of error in the cost of debt. This appears to contradict the intention of the RIIO model.

A suitable option to mitigate the risk would be to put in place a collar mechanism. This note has illustrated that a collar with a midpoint equal to the central estimate of the efficient cost of debt at the start of RIIO-GD1, with a cap and a floor of approximately ±20bp around the midpoint, would be appropriate. Such a mechanism would lead to lower risk for WWU than

the current proposals for the implementation of debt indexation, and would improve the financeability of the RIIO-GD1 proposals. Importantly, the mechanism would also limit the exposure of consumers to increases in interest rates.

An alternative option could be to modify the index weighting. However, such an index would be relative complex to implement and, depending on the starting value of the Ofgem index, could lead to under-recovery of WWU's existing debt costs. This in turn could undermine the financeability of the RIIO-GD1 price control package.

Therefore, for RIIO-GD1, a collar mechanism is likely to be a more appropriate means to mitigate risk and improve financeability.

A1 Additional sensitivities

Table A1.1 Change in risk under alternative scenarios for the market cost of debt

	Standard deviation of return on equity (bp)	% change in standard deviation of return on equity compared with fixed allowance
Scenario 2: no change in the market cost of debt		
Fixed allowance	19	–
Indexation	26	40
40bp collar	14	–24
20bp collar	14	–28
Scenario 3: 0.3% annual increase in the market cost of debt		
Fixed allowance	19	–
Indexation	26	40
40bp collar	16	–14
20bp collar	12	–34

Note: The results were produced using the same modelling framework as in a report prepared by Oxera for Energy Networks Association: 'What is the link between debt indexation and allowed returns?', July 2011. This framework uses Monte Carlo analysis to produce distributions of the average return on equity over the price control under different mechanisms for setting the cost of debt allowance. All standard deviation figures presented in the table have been rounded.
Source: Oxera.