

APPENDIX 41

**Illustration of the practical implementation of a weighted
average based on PTRM debt balances
QTC**

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One way to implement a weighted average approach is by using the prevailing cost of debt and the change in the PTRM debt balance to adjust the underlying rates in the trailing average calculation. This approach is computationally simple and transparent, which should alleviate any concerns around complexity. A simple spreadsheet model can be used to perform the calculations.

The return on debt would be calculated as a simple average of the adjusted rates. This approach is consistent with the use of a single set of weights (eg, 10 per cent for each annual observation based on a 10-year debt tenor), but still results in the changes in the PTRM debt balance being compensated at the prevailing cost of debt.

Worked example

Consider an example where the PTRM debt balance increases from \$100 to \$115 over a 1-year period. The service provider is assumed to have been operating under the trailing average approach for at least 10 years, so the underlying interest rates in the trailing average reflect the historical rates over the last 10 years. For the purpose of this example, a series of hypothetical rates have been used to populate the trailing average.

Regardless of how the return on debt is calculated, the final estimate will be applied to the PTRM debt balance to determine the dollar value of the return on debt allowance. As such, the following weights will apply to the interest rates associated with the existing and new debt:

$$\text{Weight applying to existing debt} = \$100 \div \$115 = 0.8696$$

$$\text{Weight applying to change in debt} = \$15 \div \$115 = 0.1304$$

Table 1 displays the adjustments to the rates in the trailing average based on QTC's proposed method, which compensates the increase in the debt balance at the prevailing cost of debt (6.25 per cent). Table 2 displays the weighting approach implicit in a simple average, where the increase in the debt balance is compensated at the historical rates over the last ten years.

Both calculations assume that the refinancing of the maturing portion of the existing debt balance (ie, 10 per cent) is performed immediately prior to funding the \$15 increase in the debt balance.

Table 1 Weighted Trailing Average Based on Prevailing Cost of Debt

Observation	Rates before new borrowing (%)	Rate adjustments based on change in PTRM debt balance	Rates after new borrowing (%)
-9	8.00	$8.00 \times 0.8696 + 6.25 \times 0.1304$	7.77
-8	8.50	$8.50 \times 0.8696 + 6.25 \times 0.1304$	8.21
-7	9.00	$9.00 \times 0.8696 + 6.25 \times 0.1304$	8.64
-6	8.00	$8.00 \times 0.8696 + 6.25 \times 0.1304$	7.77
-5	6.00	$6.00 \times 0.8696 + 6.25 \times 0.1304$	6.03
-4	6.00	$6.00 \times 0.8696 + 6.25 \times 0.1304$	6.03
-3	7.00	$7.00 \times 0.8696 + 6.25 \times 0.1304$	6.90
-2	8.00	$8.00 \times 0.8696 + 6.25 \times 0.1304$	7.77
-1	7.00	$7.00 \times 0.8696 + 6.25 \times 0.1304$	6.90
Prevailing	6.25	$6.25 \times 0.8696 + 6.25 \times 0.1304$	6.25
Return on debt	7.38		7.23

Table 2 Simple Trailing Average Based on Historical Cost of Debt

Observation	Rates before new borrowing (%)	Implied adjustments based on change in PTRM debt balance	Rates after new borrowing (%)
-9	8.00	$8.00 \times 0.8696 + 8.00 \times 0.1304$	8.00
-8	8.50	$8.50 \times 0.8696 + 8.50 \times 0.1304$	8.50
-7	9.00	$9.00 \times 0.8696 + 9.00 \times 0.1304$	9.00
-6	8.00	$8.00 \times 0.8696 + 8.00 \times 0.1304$	8.00
-5	6.00	$6.00 \times 0.8696 + 6.00 \times 0.1304$	6.00
-4	6.00	$6.00 \times 0.8696 + 6.00 \times 0.1304$	6.00
-3	7.00	$7.00 \times 0.8696 + 7.00 \times 0.1304$	7.00
-2	8.00	$8.00 \times 0.8696 + 8.00 \times 0.1304$	8.00
-1	7.00	$7.00 \times 0.8696 + 7.00 \times 0.1304$	7.00
Prevailing	6.25	$6.25 \times 0.8696 + 6.25 \times 0.1304$	6.25
Return on debt	7.38		7.38

The return on debt for both approaches is a simple average of the 'rates after new borrowing'. These rates would be carried over to the next year and adjusted in the same way based on next year's prevailing cost of debt estimate and change in the PTRM debt balance. In QTC's view, the return on debt calculated in Table 1 is more reflective of the efficient

financing costs of the benchmark efficient entity because the refinancing of existing debt and the funding of new borrowings are compensated based on the prevailing cost of debt.