



Trailing average cost of debt Draft Decision

UPDATED SUBMISSION TO THE QUEENSLAND COMPETITION AUTHORITY

OCTOBER 2014

Executive summary

QTC's views on the Queensland Competition Authority's (QCA) Draft Decision on the trailing average cost of debt approach are as follows:

- QTC does not agree with the proposal to retain the current on-the-day approach to calculate the regulated cost of debt. The on-the-day approach:
 - implies the use of a debt management strategy that is impossible to implement or approximate in practice
 - is inconsistent with well-established financial risk management principles and the observed debt issuance practices of regulated and unregulated firms
 - incorrectly assumes that refinancing risk is managed with an allowance rather than a strategy of maintaining staggered maturity dates such that a relatively small amount of debt is refinanced each year
 - creates the potential for large mismatches between the annual cost of debt allowance and the annual debt costs incurred by an efficiently financed firm, and
 - is out of step with the broad support received at the national level from consumers, regulated firms and other stakeholders for a 'trailing average' cost of debt approach.
- QTC continues to support the use of a weighted trailing average approach that applies to the total 10-year benchmark debt yield. A weighted trailing average approach:
 - implies the use of a prudent and efficient debt management strategy that can be replicated in practice
 - reflects the cost of debt produced by a prudent and efficient benchmark debt management strategy that is appropriate for comparable unregulated firm
 - provides correct compensation for refinancing risk by using a 10-year debt term *and* assuming that 10 per cent of the benchmark debt balance is refinanced each year, and
 - reduces the potential for investment distortions by compensating increases in the benchmark debt balance at the prevailing cost of debt.
- The trailing average and hybrid approaches are the only two cost of debt approaches with implied debt management strategies that can be replicated in practice. As such, the QCA's considerations should be limited to these approaches.
- QTC does not agree that the regulated cost of debt will be overstated if a trailing average is applied to the total 10-year debt yield. The time series properties and long-term average cost produced by this approach are appropriate for a comparable unregulated firm with relatively stable revenues that are not overly sensitive to the economic cycle.
- The NPV=0 principle will not be violated if the term of the risk-free rate in the trailing average cost of debt differs from the term of the risk-free rate in the cost of equity. This is consistent with advice provided to the QCA by Associate Professor Martin Lally.
- The debt raising cost allowance should include the costs associated with the early issuance of 10-year debt. This practice is widely used by regulated and unregulated firms, and is considered to be an essential part of a prudent strategy for managing refinancing risk. Standard & Poor's recommends an early issue period of at least 3 months for investment-grade borrowers.

Table of contents

1	The role of QTC	4
2	Regulatory objectives	5
2.1	Economic efficiency	5
2.2	Cost of debt objectives	5
2.3	Efficient debt management strategies	5
2.3.1	Managing refinancing risk	6
3	The on-the-day approach	7
3.1	Implied debt management strategy	7
3.1.1	Incorrect compensation for refinancing risk	7
3.1.2	Mismatch risk	8
3.1.3	Violation of the NPV=0 principle	8
3.1.4	Treatment of new borrowings	8
3.1.5	Credit default swaps	9
4	The trailing average approach	10
4.1	Implied debt management strategy	10
4.1.1	Correct treatment of refinancing risk	10
4.1.2	Mismatch risk	10
4.1.3	Treatment of new borrowings	10
5	Perceived overstatement of the cost of debt	12
5.1	Relationship between revenues and debt servicing costs	12
5.1.1	Revenue characteristics of natural monopolies	13
5.1.2	QCA response	14
5.2	Perceived violation of the NPV=0 principle	15
5.3	Scope for higher profits under a trailing average	16
5.4	Debt term used by other regulators	17
5.5	Debt strategy used by SEQ water retailers	18
6	Consistency with the cost of equity	19
6.1	Lally's 2014 advice to the QCA	19
6.2	Lally's 2010 advice to the QCA	19
7	Efficient investment signalling	21
7.1	QTC's weighted trailing average approach	21
7.1.1	Rationale for QTC's weighting approach	21
7.1.2	Ability to replicate the cost of debt	22
7.1.3	Data used to calculate the weights	22
7.1.4	Different WACC benchmarks for different businesses	22
8	Perceived relevance of the regulatory term	24
9	Efficient debt financing costs	25

9.1	Differences between regulated and unregulated firms	25
9.2	Relevant comparator firms	25
10	Complexity and implementation	26
10.1	More frequent estimates of the benchmark debt yield	26
10.2	Perceived issues with a weighted trailing average	26
11	Trailing average vs hybrid approach	27
11.1	Preferred strategy in the presence of regulation	27
11.2	Consistency with the cost of equity	27
11.3	'Financial buffer' during major crisis periods	28
11.4	Signals for efficient investment	28
12	Comments on the QCA's proposed position	30
12.1	Implications for price and performance monitoring	31
12.2	Questions for the QCA	31
13	Debt raising costs	32
13.1	Length of the early issue period	32
13.2	Characteristics of the short-term investment	32
Appendix A:	Debt maturity profiles of regulated utilities	33
Appendix B:	Simulation analysis	36
B.1:	Historical US data	36
B.2:	Simulating the DRP	37
B.3:	Simulating the risk-free rate	38
B.4:	Simulation results	39
B.5:	Lally's NPV=0 analysis	41

1 The role of QTC

QTC is the Queensland Government's central financing authority and corporate treasury services provider, with responsibility for:

- sourcing and managing the debt funding to finance Queensland's infrastructure requirements in the most cost-effective manner, and
- providing financial and risk management advice and services to the Queensland Government and Queensland's public sector bodies

QTC is the largest Australian semi-government issuer of Australian dollar-denominated bonds in the domestic and offshore markets, with total outstandings of approximately \$89 billion. Onlendings are made to a wide range of clients including regulated and unregulated government-owned corporations (GOCs), local government authorities, and Queensland Treasury and Trade.

QTC is active in the primary and secondary bond markets, and is a regular user of interest rate swaps, bank bill futures contracts and Commonwealth Government bond futures contracts to manage and hedge interest rate risk.

QTC is also responsible for managing the \$8.5 billion QTC Capital Guaranteed Cash Fund, which invests in high quality assets including bank bills, commercial paper, corporate floating rate notes, and mortgage and asset-backed securities.

2 Regulatory objectives

2.1 Economic efficiency

QTC agrees that it is important for a regulated firm to adopt an efficient debt management strategy to achieve economic efficiency objectives:

In the context of debt funding, an efficient debt management strategy by the regulated firm will assist in achieving allocative and productive efficiency objectives.’¹

It is equally important for the regulated cost of debt approach to create incentives for firms to adopt a prudent and efficient debt management strategy, and to provide an appropriate cost of debt allowance, both through time and on average over the long-term.

2.2 Cost of debt objectives

In QTC’s view, the main objectives of the regulated cost of debt approach are to:

- replicate (to the extent possible) the cost of debt that would be produced by a prudent and efficient benchmark debt management strategy
- minimise the difference between the annual cost of debt allowance and the annual cost of debt incurred by an efficiently financed benchmark firm, and
- provide incentives for the benchmark firm to undertake efficient capital expenditure, including the amount and timing of the expenditure.

The first objective reflects the regulatory objective of providing compensation for efficiently incurred debt financing costs. The second objective follows from the contractual nature of interest payments, and the fact that any mismatches relative to regulatory allowances must be funded as they occur. The third objective ensures that the cost of debt approach minimises the potential for investment distortions.

2.3 Efficient debt management strategies

A fundamental objective of economic regulation is to provide compensation for benchmark efficient costs, which include the costs of raising, servicing and managing debt.

Efficient debt financing costs are the costs that would be expected to be incurred by a firm that prudently structures and manages its borrowings and interest rate exposures based on a range of market-based risks and constraints. These costs are an outcome from adopting and maintaining an efficient debt management strategy.

An efficient debt management strategy results in a firm’s equity providers being exposed to an acceptable level of interest rate risk and refinancing risk taking into account the firm’s size, asset life, capital structure and the characteristics of its revenues. These considerations apply to all levered firms regardless of whether they are subject to economic regulation or price monitoring.

¹ QCA (August 2014), *Draft decision - Trailing average cost of debt*, p. 3 (hereafter, ‘QCA Draft Decision’)

Compensating a regulated firm for efficiently incurred debt financing costs can be achieved by:

- determining the characteristics of a prudent and efficient benchmark debt management strategy, and then
- making the best estimate of the benchmark costs that would be incurred to adopt and maintain this strategy over time.

2.3.1 Managing refinancing risk

Refinancing risk is the risk that a borrower is unable to issue new debt to repay a maturing debt, or that new debt can be issued, but not on the preferred terms or at a reasonable interest rate.

A levered firm cannot completely eliminate refinancing risk, so it is important for the firm to structure its borrowings to keep its exposure to adverse refinancing outcomes at a sufficiently low level. This is particularly important for highly geared firms as the costs associated with adverse refinancing outcomes must be absorbed by a relatively small amount of equity capital.

As a reasonable estimate of a firm's refinancing risk exposure is the percentage of total debt that matures each year, an efficiently financed firm will manage refinancing risk by:

- staggering the maturity dates of its borrowings out to a sufficiently long maximum tenor to reduce the size of the annual refinancing task, and
- refinancing maturing debt with long-term debt.

This strategy is consistent with the debt maturity profiles of the regulated utilities in Appendix A and the advice provided to the QCA by PricewaterhouseCoopers (PwC):

*'A prudent debt manager would seek to issue debt that results in a relatively even and manageable debt refinancing task each year. Limiting the annual refinancing obligation reduces the exposure of the firm to unforeseen events in financial markets that may make refinancing difficult or excessively costly in the short term.'*²

Efficient debt financing costs are an outcome from adopting and maintaining an efficient debt management strategy.

Refinancing risk is managed by maintaining a staggered debt maturity profile out to a sufficiently long maximum debt tenor to reduce the size of the annual refinancing task, and refinancing maturing debt with long-term debt.

In QTC's view, it is essential for *both* of these practices to be reflected in the QCA's cost of debt approach.

² PwC (June 2013), *A cost of debt estimation methodology for businesses regulated by the Queensland Competition Authority*, p. 19

3 The on-the-day approach

3.1 Implied debt management strategy

Under the on-the-day approach the QCA fully resets the regulated cost of debt at the start of each regulatory period based on:

- the prevailing risk-free rate with a term that matches the length of the regulatory period, and
- the prevailing 10-year debt risk premium (DRP)

The debt management strategy implied by the on-the-day approach is as follows:

- The benchmark firm refinances its entire debt balance by issuing a single 10-year floating-rate bond at the start of each regulatory period, which is typically no longer than 5 years.
- An interest rate swap is transacted at the start of each regulatory period to lock in a fixed base interest rate for the term of the regulatory period.

It is not feasible or possible for a firm to have its entire debt balance maturing at a single point in time. Even if this was possible, it cannot be assumed that the firm can refinance its outstanding floating-rate bond 5 years prior to maturity at the original DRP issue level.

In practice, an efficiently financed regulated firm will maintain a staggered debt maturity profile out to 10 years to manage refinancing risk. As 10 per cent of the debt balance is refinanced and repriced each year, the firm's actual cost of debt is likely to differ significantly from the regulated cost of debt that is based on prevailing rates at the start of each regulatory period.

As a consequence, the implied debt management strategy under the on-the-day approach cannot be implemented or approximated in practice.

3.1.1 Incorrect compensation for refinancing risk

The QCA claims that the on-the-day approach provides adequate compensation for managing refinancing risk by using a 10-year debt risk premium (DRP) in the regulated cost of debt.

As explained in Section 2.3.1, a prudent and efficient strategy for managing refinancing risk involves adopting a staggered debt maturity profile to limit the size of the annual refinancing task and maintaining this profile by refinancing maturing debt with long-term debt. Based on a 10-year benchmark debt term, 10 per cent of the total debt balance will be refinanced and repriced each year at the prevailing cost of debt.

In contrast, the on-the-day approach assumes that a firm's entire debt balance matures at a single point in time. As a consequence, the on-the-day approach does not provide correct compensation for managing refinancing risk because it fails to take into account the time series properties of the costs incurred by a firm that efficiently manages refinancing risk.

Although the absolute level of compensation will be appropriate when measured on average over a very long period of time, an efficiently financed firm will still be exposed to large

mismatches between the annual cost of debt allowance and its actual cost of debt³. These mismatches are entirely due to regulatory design, and QTC considers this to be a major weakness of the on-the-day approach.

3.1.2 Mismatch risk

The average DRP paid by an efficiently financed firm will be approximately equal to the 10-year trailing average of the 10-year DRP. On a year-by-year basis the average DRP is likely to differ significantly from the prevailing DRP at the start of each regulatory period, especially if the regulatory period is short (eg, 1 year).

The model set out in Appendix B has been used to simulate the annual mismatches between a 10-year trailing average of the DRP and a DRP based on 1- and 5-year regulatory resets.

Based on 20,000 simulations over a 200 year period, the average standard deviation of the annual mismatches is 87 basis points for 1-year regulatory resets and 73 basis points for 5-year regulatory resets. These estimates are based on a constant debt balance.

To put these figures into perspective, based on benchmark gearing of 60 per cent and a 30 per cent corporate tax rate, an 85 basis point mismatch in the cost of debt is equivalent to a 91 basis point mismatch in the effective return to the equity providers⁴. These mismatches are entirely due to regulatory design.

These results do not support the QCA's claim that the existing on-the-day approach provides a good approximation of the efficient debt costs of a regulated firm⁵.

3.1.3 Violation of the NPV=0 principle

The QCA acknowledges that the debt management strategy implied by the on-the-day approach cannot be implemented in practice. However, this is not considered to be an issue because the approach only results in minor violations of the NPV=0 principle⁶.

In reaching this conclusion the QCA has not considered the annual mismatches that are likely to be experienced by an efficiently finance firm operating under the on-the-day approach. As shown in Section 3.1.2, the potential mismatches are large.

If two regulated cost of debt approaches satisfy the NPV=0 principle, but one approach produces significantly smaller annual mismatches between the regulated cost of debt and the costs incurred by an efficiently financed firm, then that approach should be adopted.

3.1.4 Treatment of new borrowings

The on-the-day approach assumes that all new borrowings are made at the start of each regulatory period. In practice, a regulated firm is likely to make borrowings during the regulatory period, however these borrowings are compensated at the cost of debt at the start of the regulatory period rather than the prevailing cost of debt. Compensating new investment at

³ As explained in Section 5, it is not possible to assess the risk of a debt management strategy by simply focussing on the average cost of debt over the long-term. The same principle can be applied to the mismatches between the regulated cost of debt allowance and the costs incurred by an efficiently financed firm.

⁴ $\$60 \times 87\text{bp} \times (1-0.3) \div \40

⁵ QCA Draft Decision, p. 6

⁶ QCA Draft Decision, p. 6

historical rates is contrary to the QCA's views on the importance of using the prevailing cost of debt to provide correct signals for new investment:

*'In addition, the prevailing cost of debt at the time of investment is generally considered to be the best indicator of future borrowing costs and, as such, provides better signalling for efficient new investment to promote dynamic efficiency.'*⁷

The QCA suggests that forward-starting swaps can be transacted during the rate reset period to hedge the base interest rate on known future borrowings, although the DRP cannot be hedged in the same way.

When the slope of the swap curve is positive the interest rate on a forward-starting swap will be higher than the prevailing swap rate during the rate reset period. The QCA does not provide compensation for these incremental interest costs.

3.1.5 Credit default swaps

The QCA argues that the debt management strategy implied by the on-the-day approach cannot be implemented in practice due to a lack of credit default swaps (CDS).

As explained in QTC's submission to the Issues Paper, it is the structure of a CDS that makes it unsuitable for hedging the DRP, rather than a lack of liquidity or because contracts are not available on the desired bonds.

Specifically, it is not possible for a firm to buy or sell credit protection on itself. Even if the CDS contracts were available for the required volumes and tenors, they could not be used in the way implied by the QCA to convert the average DRP on debt portfolio with staggered maturity dates into a DRP that matches the term of the regulatory period⁸.

In QTC's view, the debt management strategy implied by the on-the-day approach cannot be implemented in practice because it is inconsistent with well-established financial risk management principles, not because of a lack of hedging instruments.

QTC does not consider the on-the-day approach to be a valid approach for calculating the regulated cost of debt.

The on-the-day approach implies the use of a debt management strategy that cannot be implemented or approximated in practice. Furthermore, by assuming that a firm's entire debt balance matures at a single point in time, the approach cannot provide correct compensation for refinancing risk.

The on-the-day approach creates the potential for large mismatches between the annual cost of debt allowance and the annual debt costs incurred by an efficiently financed firm.

⁷ QCA Draft Decision, p. 3

⁸ Even if 'credit margin swaps' were available, the fixed rate on the swap would not include the liquidity premium that makes up the majority of the DRP for an investment-grade borrower. As a consequence, a regulated firm could not use this type of swap to convert the average DRP on a debt portfolio with staggered maturity dates into a DRP that matches the term of the regulatory period.

4 The trailing average approach

4.1 Implied debt management strategy

The trailing average approach replicates the cost of debt produced by a portfolio of fixed-rate bonds with annually spaced maturities from 1- to 10-years. The 'hybrid' approach replicates cost of debt produced by a portfolio of floating-rate bonds with annually spaced maturities from 1- to 10-years. This portfolio can be combined with an interest rate swap overlay to convert the floating base interest rate to a fixed rate.

As noted by the Australian Energy Regulator (AER), the trailing average approach is based on an efficient debt management strategy and promotes economic efficiency:

*In the presence of refinancing risk, it is efficient for a service provider to hold a portfolio of debt with staggered maturity dates. The allowed return on debt under the trailing average portfolio approach reflects the financing cost of a benchmark efficient entity with such a staggered portfolio. Further, we consider the approach promotes productive, allocative, and dynamic efficiency of debt financing practices.'*⁹

4.1.1 Correct treatment of refinancing risk

The trailing average and hybrid approaches reflect the fact that, in practice, refinancing risk is managed with a strategy of maintaining staggered maturity dates out to a 10-year tenor to limit the size of the annual refinancing task. This profile is maintained over time by refinancing maturing debt with 10-year debt.

Unlike the on-the-day approach, the time series properties of the regulated cost of debt under a trailing average approach are consistent with the costs that would be incurred by a firm that efficiently manages its exposure to refinancing risk. It follows that a trailing average that is based on a 10-year benchmark debt term will provide correct compensation for refinancing risk, on an annual basis and on average over the long-term.

4.1.2 Mismatch risk

The trailing average approach replicates the cost of debt produced by a prudent and efficient debt management strategy that can be implemented in practice. As a result, this approach will produce small differences between the annual regulated cost of debt allowance and the annual cost of debt incurred by an efficiently financed firm.

Furthermore, the trailing average and hybrid approaches both satisfy the NPV=0 principle (refer Section 6).

4.1.3 Treatment of new borrowings

The trailing average approach can be implemented using a simple or weighted trailing average of the 10-year debt yield¹⁰. A simple trailing average compensates increases in the benchmark debt balance at the historical average debt yield rather than the prevailing debt yield.

⁹ AER (August 2013), *Better Regulation – Explanatory statement: Draft rate of return guideline*, p. 83

¹⁰ The same weighting approach can be applied to the DRP under the hybrid approach.

A weighted trailing average compensates increases in the benchmark debt balance at the prevailing debt yield, which provides more appropriate signals for new investment compared to a simple trailing average and the on-the-day approach.

In QTC's view, a trailing average approach is a valid and appropriate approach for calculating the regulated cost of debt.

Under a trailing average approach, the cost of debt equals the cost produced by a prudent and efficient debt management strategy that can be implemented in practice.

The implied debt management strategy is consistent with the observed debt financing practices of regulated and unregulated firms, which demonstrates that the strategy is prudent and efficient.

Unlike the on-the-day approach, a trailing average approach provides correct compensation for refinancing risk, on an annual basis and on average over the long-term, by recognising that refinancing risk is managed with a strategy of maintaining staggered maturity dates to limit the size of the annual refinancing task.

A weighted trailing average based on benchmark debt balances will provide better signals for new investment compared to a simple trailing average and the on-the-day approach.

5 Perceived overstatement of the cost of debt

QTC does not agree that the regulated cost of debt will be overstated if a trailing average is applied to the total 10-year debt yield.

The QCA suggests that the efficient debt policy of a comparable unregulated firm would be to use interest rate swaps to achieve a base interest rate term significantly shorter than 10 years.¹¹ This conclusion is based on the following hypothetical scenario outlined by Lally:

It is implicit in such an approach that the benchmark firms borrow but do not then enter into swap contracts to shorten the effective life of their debt, in respect of the risk free rate or DRP components. However, it is unlikely that efficient unregulated firms would act in this way because debt is (in general) progressively more expensive as its term increases. It is more likely that an efficient unregulated firm would choose both its debt term and interest rate swap contracts to optimally trade off the reduction in refinancing risk from longer term debt, the increase in the risk free rate with the effective debt term, the transactions costs of the swap contracts, and the increased interest rate volatility arising from a shorter effective debt term.

Consequently an efficient unregulated firm might borrow for ten years but couple this with interest rate swap contracts in order to convert the risk free rate component of the cost of debt to (say) three years, thereby reducing the risk free rate component to the three year rate. In this event the cost of debt for firms that are regulated with a trailing average cost of debt should be the three year average of the three year risk free rate plus the ten year average of the ten year DRP plus the cost of the swap contracts.’¹²

QTC does not consider this to be an accurate description how an efficient unregulated firm would determine its strategy for managing interest rate risk. As explained in QTC’s response to the Issues Paper, the appropriate interest rate risk management strategy for an unregulated depends on the characteristics of its revenues and its level of gearing.

5.1 Relationship between revenues and debt servicing costs

The importance of considering the characteristics of a firm’s revenues when determining an appropriate debt management strategy has been examined in detail by Martellini and Milhau (2011). Rather than focusing on debt management in isolation, Martellini and Milhau consider the interaction between a firm’s revenues and the debt servicing costs produced by different types of debt:

We attempt to answer the following question: given an exogenous revenue process for a corporation, what is the optimal liability structure when the issuer faces such instruments as fixed-rate debt, floating rate debt, and inflation-linked debt? In fact, this problem is the exact counterpart of the standard asset/liability management problem for a pension fund, in which liabilities are exogenously given while it is the allocation decision that is optimised.’¹³

Martellini and Milhau’s main conclusion is that what matters is not the absolute variation in debt servicing costs, but the variation in revenues net of debt servicing costs. This requires

¹¹ QCA Draft Decision, p. 15

¹² Lally, M. (March 2014), *The Trailing Average Cost of Debt* p. 43

¹³ Martellini, L. and V. Milhau (March 2011), *Optimal Design of Corporate Market Debt Programmes in the Presence of Interest-Rate and Inflation Risks*, p. 8

taking into account the correlation between the firm's revenues and the debt servicing costs produced by different types of debt:

*We have found that the optimal blend of fixed- and floating-rate bonds depends on the correlation of the interest-rate process and firm asset-value process, whereas interest-rate volatility and interest-rate risk premia have comparatively little quantitative impact on debt-management decisions. On the whole, these results suggest that, to maximise their value, **firms should mostly choose their debt structure in such a way as to hedge the risk factors impacting their cash flows rather than to optimise the cost/risk tradeoff of their debt.**'¹⁴ [emphasis added]*

The 'cost/risk trade-off' referred to by Martellini and Milhau is the same trade-off that Lally considers to be the main determinant of the efficient debt policy for an unregulated firm.

The interaction between revenues and debt servicing costs explains why commodity firms such as Rio Tinto choose to maintain a relatively high exposure to floating interest rates, even though this increases the absolute volatility of its debt servicing costs:

*Rio Tinto's interest rate management policy is generally to borrow and invest at floating interest rates. This approach is based on historical correlation between interest rates and commodity prices. In some circumstances, a higher proportion of fixed rate funding may be considered appropriate.'*¹⁵

The same joint consideration of revenues and debt servicing costs can be used to determine the efficient debt policy for an unregulated firm that is otherwise similar to the firms regulated by the QCA.

5.1.1 Revenue characteristics of natural monopolies

Using interest rate swaps to achieve a shorter-term base interest rate may be appropriate if the firm's revenues are cyclical or correlated with changes in short-term interest rates. This approach will reduce earnings volatility by achieving consistency between revenues and debt servicing costs.

Firms with relatively low gearing may also choose a shorter-term base interest rate exposure. If the impact of changes in interest rates on earnings is sufficiently small, there may be no need for these firms to incur the term premium associated with longer-term swap rates.

The firms that are of relevance to the QCA are natural monopolies that:

- provide an essential service
- operate long-lived assets in capital intensive industries, and
- maintain gearing levels that are significantly higher than the average gearing for listed firms.

Due to the essential nature of the service provided, it is likely that the income elasticity of demand for the service will be very low. As a consequence, the revenues of a comparable unregulated firm are likely to be relatively stable and not sensitive to the economic cycle or changes in short-term interest rates. From risk management perspective, it is appropriate for

¹⁴ Martellini and Milhau, p. 38

¹⁵ Rio Tinto 2011 Annual Report. Note 31, p. 176

this type of firm to adopt a debt management strategy that produces a relatively stable *total* cost of debt.

Based on these considerations and the financial risk management principles outlined in Section 5.1, it is QTC's view that the efficient debt policy for a comparable unregulated firm would be to maintain a portfolio of fixed-rate debt with annually spaced maturities out to at least 10 years. This will reduce volatility in the firm's revenues net of debt servicing costs as only 10 per cent of the total debt balance is repriced each year at the prevailing cost of debt.

In a regulatory context, this is equivalent to using a trailing average of the total 10-year debt yield to calculate the regulated cost of debt.

The appropriate level of interest rate risk exposure for an efficient unregulated firm depends on the characteristics of its revenues and level of gearing.

Based on the financial risk management principles outlined in Section 5.1, it is QTC's view that the efficient debt policy for a comparable unregulated firm would be to maintain a portfolio of fixed-rate debt with annually spaced maturities out to at least 10 years.

5.1.2 QCA response

The QCA does not agree with QTC's views on how a comparable unregulated firm would determine its strategy for managing interest rate risk:

*'QCA is not persuaded by this [QTC's] argument. Estimates obtained by QCA during recent water investigations suggest that the transactions costs for swapping CGS bonds is considerably less than the term premium for the 10-year risk-free rate.'*¹⁶

*'However, for a given benchmark associated with a specific term to maturity, whether the regulatory cost of debt is based on the 'on the day' rate or an average of that 'on the day' rate over time, the average cost of debt will not be systematically different over the long run. Given the trailing average applied to the total cost of debt will include a 10-year risk-free rate as compared with a shorter term risk-free rate under the other two approaches, it is expected that adopting this approach would systematically lead to an average cost of debt being higher in the long run.'*¹⁷

QTC considers this is to be a simplistic and incomplete response to the issue being considered.

Firstly, interest rate risk management is, by definition, concerned with potential variations in outcomes, such as the difference between a firm's revenues and its debt servicing costs. In contrast, the QCA only considers the average cost associated with different debt tenors (including transaction costs). This is equivalent to using price as the sole criteria for differentiating between two debt products with different attributes and risk profiles.

Secondly, if average costs (including transaction costs) were the only relevant consideration, all unregulated firms would maintain a 100 per cent exposure to floating interest rates, yet this does not happen in practice. In practice, efficient unregulated firms should be primarily

¹⁶ QCA (August 2014), *Long-term framework for SEQ water retailers – weighted average cost of capital (WACC)*, p. 29

¹⁷ QCA Draft Decision, p. 17

concerned with managing risk rather than speculating on interest rates in an attempt to reduce their cost of debt:

*In other words, the main motive for debt management is not to lower the cost of debt financing but to hedge exposure to interest-rate and inflation risks.*¹⁸

Thirdly, the QCA observes that under the on-the-day approach, regulated firms use swaps to lock in a fixed base interest rate for the term of the regulatory period. If average costs (including transaction costs) were the only relevant consideration, as the QCA assumes is the case for comparable unregulated firms, it is unclear why the observed behaviour of regulated firms is consistent with minimising risk rather than minimising cost¹⁹.

Finally, in the hypothetical example relied upon by the QCA, Lally does not explain why the trade-off between interest rate risk and cost (including transaction costs) will identify a shorter-term swap rate as being 'optimal'. This may be the case for firms with cyclical revenues (eg, Rio Tinto) and/or relatively low gearing, but that does not describe the characteristics of the firms that are of interest to the QCA.

Interest rate risk management is concerned with potential variations in outcomes, such as the difference between a firm's revenues and its debt servicing costs.

It follows that debt strategies with different risk profiles cannot be compared by only considering the long-term average cost of debt (including transaction costs).

The claim that the cost of debt may be overstated if a 10-year yield is used in the trailing average cost of debt is based on the expected interest rate risk management practices of a comparable unregulated firm. The QCA has not demonstrated why a firm with stable revenues and relatively high gearing would use swaps to achieve a short-term base interest rate exposure on its entire debt portfolio.

5.2 Perceived violation of the NPV=0 principle

The QCA argues that an overstatement of the cost of debt could result in a material violation of the NPV=0 principle²⁰.

To support this position, the QCA refers to the following hypothetical example from Lally:

To illustrate this point, suppose that otherwise similar unregulated firms have ten-year debt, use interest rate swap contracts to convert the risk free rate component of their cost of debt to the three-year rate, the average ten-year DRP is 2%, the average ten-year risk-free rate is 6%, the average three-year risk-free rate is 5%, and the transactions costs of the swap contracts are 0.20%. The average cost of debt of these firms is then 7.2%, comprising the average three-year risk-free rate of 5%, the ten-year DRP of 2%, and the transactions costs of the swap contracts. However, a regulator who merely observed their average

¹⁸ Martellini and Milhau, p. 10

¹⁹ For example, the term premium between the 3-month and 5-year swap rate is currently 60 basis points. If minimising cost was the primary objective, regulated firms would issue term floating rate debt and not hedge the base interest rate.

²⁰ QCA Draft Decision, p. 17

debt term of ten years and ignored their interest-rate swap contracts would allow a ten-year cost of debt, with an average rate of 8%. The allowed cost of debt would then be too high by 0.8%.’²¹

It is important to note that this section from Lally’s report is accompanied by the following footnote:

‘This does not involve a violation of the NPV = 0 principle because it is feasible for unregulated firms to borrow for ten years and not use interest rate swap contracts, imposition of the trailing average regime for the entire cost of debt would not be expected to change the behaviour of firms acting in this way, and this combination of firm and regulatory behaviour would satisfy the NPV = 0 principle. It could not even be argued that such behaviour by firms was unviable...’ [emphasis added]

Lally also argues that:

‘However, given the widespread use of interest rate swap contracts by unregulated firms, it is unlikely that unregulated firms would act in this fashion. Consequently, any regulator who adopts the trailing average regime described here would probably not be mirroring the behaviour of such firms and would therefore fail to satisfy its own objective of mirroring the behaviour of unregulated firms.’

The firms that are of interest to the QCA are *comparable* unregulated firms. As explained in Section 5.1, the efficient debt policy for an unregulated firm depends on the characteristics of its revenues and level of gearing. This suggests that a wide range of swap strategies and tenors are likely to be used by different unregulated firms.

Observing the widespread use of swaps by unregulated firms in general does not support the claim that a comparable unregulated firm (ie, a firm with relatively stable revenues and relatively high gearing) will follow the specific swap strategy in Lally’s example.

Using swaps to achieve a shorter-term base interest rate may be appropriate firms with cyclical revenues and/or relatively low gearing, but this does not describe the characteristics of the firms that are of interest to the QCA.

QTC agrees with Lally’s observation that any feasible debt policy coupled with a matching policy for calculating the regulated cost of debt will satisfy the NPV=0 principle.

5.3 Scope for higher profits under a trailing average

The QCA suggests that, if the regulated cost of debt is based on a trailing average of the total 10-year debt yield, there is scope for a regulated firm to earn higher profits by continuing to use interest rate swaps. These higher profits are considered to be a potential violation of the NPV=0 principle²².

QTC’s understanding of the QCA’s position is as follows:

²¹ Lally (March 2014), p. 44. Lally’s example implies that the maximum swap tenor in the Australian market is 10 years. However, the Australian Financial Markets Association (AFMA) collates and publishes swap quotes from a range of market makers with tenors out to 15 years.

²² QCA Draft Decision, p. 17

- If an on-the-day or hybrid approach is used to determine the regulated cost of debt, a regulated firm will use interest rate swaps to lock in a fixed base interest rate for the term of the regulatory period (ie, it will adopt a matching strategy).
- If a trailing average is applied to the total 10-year debt yield to determine the regulated cost of debt, a regulated firm will continue to use interest rate swaps to lock in a fixed base interest rate for the term of the regulatory period (ie, it will not adopt a matching strategy).

The QCA suggests that a regulated firm will not adopt a matching strategy under a trailing average that applies to the total 10-year debt yield because the margin between 5- and 10-year risk-free rates exceeds the transaction costs on interest rate swaps²³.

The same reasoning could also be applied to the on-the-day and hybrid approaches. For example, the current margin between 1- and 5-year swaps (60 basis points) is higher than the margin between 5- and 10-year swaps (50 basis points). According to the QCA's reasoning, there is scope for a regulated firm to earn even higher profits under the on-the-day approach by adopting a 'no matching' policy and rolling over a series of 1-year swaps during each 5-year regulatory period.

Departing from the debt management strategy implied by the regulated cost of debt approach will expose the firm's equity providers to interest rate risk, and this applies to all cost of debt approaches²⁴. As regulated firms are not in the business of speculating on interest rates, it is reasonable to assume that they will continue to adopt a matching strategy regardless of which approach is used to calculate the regulated cost of debt²⁵.

Finally, even if a regulated firm chooses to adopt a 'no matching' strategy, the outcomes of this decision (which may be gains or losses relative to the cost of debt allowance) will have no impact on the allowed revenues or prices paid by consumers. It follows that these additional profits or losses will not cause a violation of the NPV=0 principle.

In QTC's view, it is inconsistent for the QCA to assume that a regulated firm will hedge its base interest rate under the on-the-day and hybrid approaches, but not do so under a trailing average approach that applies to the total 10-year debt yield.

5.4 Debt term used by other regulators

Following an extensive consultation process, the AER concluded that applying a trailing average to the total 10-year benchmark debt yield will produce a cost of debt that is commensurate with the efficient financing costs of a benchmark firm.

In its 2013 weighted average cost of capital (WACC) review, the Independent Pricing and Regulatory Tribunal (IPART) decided to increase the term of the risk-free rate used in the cost of debt from 5- to 10-years. IPART considers a 10-year term to be consistent with determining the WACC for a benchmark entity that operates in a competitive market and faces similar risks to the regulated firm that is subject to IPART's decision²⁶.

²³ QCA Draft Decision, p. 17

²⁴ That is, a mismatch between the regulated cost of debt allowance and the actual cost of debt.

²⁵ Assuming it is possible to implement the matching strategy in practice.

²⁶ IPART (December 2013), *Review of WACC Methodology – Final Report*, p. 9

These recent decisions do not support the claim that the regulated cost of debt will be overstated if a trailing average is applied to the total 10-year debt yield.

5.5 Debt strategy used by SEQ water retailers

Queensland Urban Utilities (QUU) and Unitywater are currently subject to price monitoring by the QCA, and these arrangements will change to annual performance monitoring from 1 July 2015.

Both businesses have advised the QCA that they are funded with a diversified portfolio of fixed rate debt with (approximately) annually spaced maturities out to about 10 years²⁷. As such, these businesses are already following a debt management strategy that is consistent with a trailing average approach that applies to the total 10-year debt yield.

The decision to adopt and maintain a staggered debt maturity profile, despite the lack of regulatory incentives to do so, is a strong indication of the efficiency of this strategy.

²⁷ QCA (August 2014), *Long-term framework for SEQ water retailers – weighted average cost of capital (WACC)*, p. 22

6 Consistency with the cost of equity

The QCA claims that the term of the risk-free rate in the cost of debt and cost of equity should be the same to satisfy the NPV=0 principle²⁸.

The QCA currently uses a risk-free rate with a term that matches the length of the regulatory period to estimate the cost of equity. As the length of the regulatory period is less than 10 years, the perceived requirement to use a single term for the risk-free rate prevents the QCA from using a trailing average that applies to the total 10-year debt yield.

QTC does not agree with this claim. The NPV=0 principle will not be violated if a regulated firm can match the regulated cost of debt with a feasible debt management strategy²⁹. If this can be done the expected difference between the annual cost of debt allowance and the annual debt costs incurred by the firm will be zero, which satisfies the NPV=0 principle in regards to the debt funded portion of the firm. The choice of term for the risk-free rate in the cost of equity does not affect this conclusion, nor do any disagreements over what the term of the risk-free rate in the cost of equity should be.

The relevant question is whether using a different term in the trailing average cost of debt will cause the NPV=0 principle to be violated. Although QTC's considers a 10-year term to be appropriate for estimating the cost of equity, this point of difference with the QCA is not relevant when determining if the term of the risk-free rate in the trailing average cost of debt will cause the NPV=0 principle to be violated.

6.1 Lally's 2014 advice to the QCA

Lally advised that the NPV=0 principle will not be violated if the prevailing risk-free rate is used in the cost of equity and a trailing average of the risk-free rate is used in the cost of debt:

Lally (2014) considered that there was no inconsistency in using the prevailing risk-free rate in setting the regulatory cost of equity and using a trailing average cost of debt approach. Lally argued that, provided it is feasible for firms to engage in a debt strategy in which the total cost of debt or the debt risk premium is a trailing average, regulatory use of a trailing average regime will satisfy the NPV=0 Principle.'

*However, Lally did not specifically comment on the inconsistency in the term of the risk-free rate used if the trailing average is applied to the total cost of debt.'*³⁰

6.2 Lally's 2010 advice to the QCA

In previous advice to the QCA Lally did specifically comment on the use of different terms for the risk-free rate in the cost of equity and a trailing average that applies to the total 10-year debt yield:

²⁸ QCA Draft Decision, p. 24

²⁹ Lally (March 2014), p. 4

³⁰ QCA Draft Decision, p. 24

The fourth option would be for the firm to borrow for more than one year (ten years, for example) and use neither interest rate swap contracts nor credit default swaps to convert the ten year debt into one year debt. In this event, the total costs of debt that would be incurred by the firm each year would be the average ten year risk free rate embedded in its existing debt, the average ten year debt premium embedded in its existing debt, and the annualised debt issue costs arising from ten yearly debt issues.

Thus, the pricing strategy that would just recover costs ex ante (NPV=0) would invoke these [ten year] debt costs along with the prevailing one year risk free rate for the cost of equity, and the same costs should then be invoked by the QCA in setting WACC for monitoring purposes.’³¹

The debt component of regulatory pricing strategy described by Lally is consistent with a trailing average that applies to the total 10-year cost of debt³².

Lally’s advice does not support the QCA’s claim that the same term for the risk-free rate must be used in the cost of equity and the trailing average cost of debt to satisfy the NPV=0 principle.

³¹ Lally, M. (September 2010), *The appropriate term for WACC parameters for the SEQ interim price monitoring*, p. 10

³² Lally also outlines a third debt management strategy that is consistent with the hybrid approach. In choosing between the two approaches, Lally favours the hybrid approach on the grounds that *‘it prompts firms to adopt a debt strategy whose costs can be replicated more closely by the QCA in its WACC setting’*. In QTC’s view, the cost of debt approach should not be determined based on what is most convenient for the regulator.

7 Efficient investment signalling

The QCA does not support the use of a weighted trailing average due to perceived issues with greater complexity and a perceived lack of transparency of possible weighting approaches³³.

7.1 QTC's weighted trailing average approach

QTC's proposed cost of debt approach replicates the cost produced by a benchmark portfolio of fixed rate bonds with annually spaced maturities from 1 to 10 years. In the presence of new investment the approach assumes that the increase in the benchmark debt balance is equally funded by the 10 bonds in the benchmark portfolio (ie, each bond funds 10 per cent of the new borrowing at the prevailing benchmark debt yield).

For example, if the starting debt balance is \$100, each bond is assumed to provide \$10 of funding. If a new borrowing of \$15 is made, each bond is assumed to provide an additional \$1.50 of funding at the prevailing debt yield. The post-borrowing yield that applies to each bond is calculated as follows:

$$\text{Post-borrowing yield (QTC)} = (\$10.00 \times \text{original yield} + \$1.50 \times \text{prevailing yield}) \div \$11.50$$

This is equivalent to giving a weight of 0.1304 (ie, $\$15 \div \115) to the prevailing yield and a weight of 0.8696 (ie, $\$100 \div \115) to the original yield, which is identical to the method set out in Appendix B of QTC's submission to the trailing average cost of debt Issues Paper.

In practice, it is unlikely that a regulated firm will exactly follow this type of debt issuance strategy to fund new investment. As shown in Appendix A, regulated firms do not maintain perfectly smooth debt maturity profiles, which may reflect the practice of funding new investment with 10-year debt. If the new borrowing is relatively large, the firm may choose to issue multiple bonds with different tenors to avoid creating a debt profile that is too lumpy. If the borrowing is relatively small, the firm is likely to just issue 10-year debt.

7.1.1 Rationale for QTC's weighting approach

QTC's weighting approach was developed in response to the AER's proposal to use a simple (ie, unweighted) trailing average of the total 10-year debt yield to calculate the regulated cost of debt. In the presence of new investment a simple trailing average implicitly assumes that increases in the debt balance are equally funded across the 10 bonds in the benchmark portfolio, but at the historical yield that applies to each bond rather than the prevailing yield. Using the same example above, the AER implicitly applies the following calculation:

$$\text{Post-borrowing yield (AER)} = (\$10.00 \times \text{original yield} + \$1.50 \times \text{original yield}) \div \$11.50$$

QTC's approach preserves the key features of the AER's approach, such as using a 10-year debt term and maintaining an even debt maturity profile out to 10 years, while still assigning the prevailing debt yield to increases in the debt balance.

Under QTC and AER approaches, the trailing average cost of debt is a simple average of the post-borrowing yields on the 10 bonds in the benchmark debt portfolio.

³³ QCA Draft Decision, p. 27

7.1.2 Ability to replicate the cost of debt

The QCA states that QTC's implied funding strategy cannot be replicated in practice because 10 per cent of the new borrowing is assumed to be refinanced each year over the next 10-years, whereas the actual borrowing is likely to be funded with a single 10-year borrowing.

Under the on-the-day approach, the DRP on a new borrowing is only correctly compensated for the first 5 years (assuming a 5-year regulatory period). The compensation received for the last 5 years will depend on the prevailing DRP at the start of the next regulatory period. Larger mismatches will occur on new borrowings made during the regulatory period.

Table 3 in Appendix B shows the standard deviation of the simulated mismatches that arise if a new borrowing is fully funded with 10-year fixed rate debt, but compensation is received over the next 10 years based on QTC's weighted trailing average approach. Table 4 shows the results assuming a new borrowing is fully funded with 10-year floating rate debt, but compensation is received over the next 10 years based on the on-the-day approach with 1- and 5-year resets.

The standard deviation of the mismatches is higher under the on-the-day approach compared to the weighted trailing average approach, and this is especially the case for 1-year resets, which is how the QCA intends to calculate the benchmark cost of debt for the SEQ water retailers.

It is important to note that in addition to the mismatch on new borrowings, the on-the-day approach also produces significant annual mismatches on the *entire* debt balance when there are no new borrowings, as shown in Table 2 in Appendix B.

7.1.3 Data used to calculate the weights

The weights in QTC's weighted trailing average approach are based on changes in the benchmark debt balance (ie, $RAB \times \text{benchmark gearing}$). These weights are applied to the benchmark debt yields to calculate the regulated cost of debt.

The RAB and benchmark gearing are used in the building block model to determine the allowed revenues, so it is reasonable to use this information to calculate a weighted trailing average. This should address any concerns over transparency in how the weights are determined.

This approach is consistent with a benchmark approach as the actual mix of debt and equity that is used to fund new investment does not affect the cost of debt allowance and the prices paid by consumers.

7.1.4 Different WACC benchmarks for different businesses

The QCA states that a weighted trailing average will produce a different regulated cost of debt for different firms, even if all other WACC parameters are the same³⁴.

The main objective of the cost of debt approach is to ensure that compensation is provided for efficiently incurred benchmark debt costs. There is no requirement to equalise the benchmark

³⁴ QCA Draft Decision, p. 21

cost of debt across all regulated firms. In fact, doing so would be contrary to promoting dynamic efficiency:

*The prevailing cost of debt at the time of investment is generally considered to be the best indicator of future borrowing costs and, as such, provides better signalling for efficient new investment to promote dynamic efficiency.*³⁵

If the timing and/or size of the investment profiles of two otherwise comparable regulated firms differ, it follows that their efficiently incurred debt costs will be different, and this should be reflected in the respective regulated cost of debt allowances.

Provided the weighted trailing average is calculated using benchmark debt balances and the prevailing benchmark debt yield, the approach is consistent with incentive-based regulation.

QTC's weighted trailing average approach is a simple and pragmatic way of maintaining a benchmark debt portfolio with a constant exposure refinancing risk (ie, 10 per cent of total debt maturing each year) while ensuring that regulated firms are compensated for issuing 10-year debt.

The ability to match the regulated cost of debt on existing and new borrowings is significantly greater under QTC's weighted trailing average approach compared to the on-the-day approach.

³⁵ QCA Draft Decision, p. 18

8 Perceived relevance of the regulatory term

The QCA considers the appropriate benchmark entity to be an efficient regulated comparator, and therefore the regulatory term is an ‘inherent factor’ in determining the cost of debt³⁶.

The amount of regulated assets that are subject to an on-the-day approach reduced significantly following the release of the AER’s Rate of Return Guideline in December 2013. The AER currently regulates 32 gas and electricity networks across Australia with total assets of approximately \$100 billion. These firms will have their cost of debt determined by a trailing average that applies to the total 10-year benchmark debt yield. The term of the regulatory period is of no relevance to this calculation.

IPART has recently moved away from a pure on-the-day approach and now gives weight to the 10-year average of the 10-year debt yield, which is effectively a trailing average without annual updates.

QTC assumes that the QCA will continue to view these regulated firms as relevant comparator firms when determining its final cost of debt approach.

In QTC’s view, it cannot be argued that the length of the regulatory period is an inherent factor in determining the regulated cost of debt for the benchmark entity. As a consequence, there is no reason or requirement for the term of the regulatory period to have any impact on the regulated cost of debt.

³⁶ QCA (August 2014), *Long-term framework for SEQ water retailers – weighted average cost of capital (WACC)*, p. 32

9 Efficient debt financing costs

9.1 Differences between regulated and unregulated firms

The QCA suggests that the regulated cost of debt approach should reflect certain differences between regulated and unregulated firms:

*'A regulated firm will have circumstances that differ from those of unregulated firms in competitive markets, and the cost of capital allowed by the regulator must compensate it for relevant risks rather than necessarily matching the cost of capital of a comparable unregulated firm in a competitive market.'*³⁷

Refinancing risk is a common risk that must be managed by all levered firms, regulated or otherwise. The near universal use of staggered debt maturity profiles to manage refinancing risk by regulated and unregulated firms clearly demonstrates the efficiency of this practice.

In QTC's view, this practice should be reflected in the QCA's cost of debt approach, which requires the use of a trailing average approach.

9.2 Relevant comparator firms

In determining efficient debt financing costs for a regulated firm, the QCA argues that the relevant comparator firms are typically other regulated firms³⁸.

As explained in Section 8, a significant number of relevant domestic comparator firms will now receive a regulated cost of debt that is:

- based on a 10-year benchmark debt tenor, and
- calculated using a trailing average of the total 10-year benchmark debt yield, either partially or in full³⁹.

QTC assumes that the QCA will continue to view these regulated firms as relevant comparator firms when determining its final cost of debt approach.

³⁷ QCA Draft Decision, p. 23

³⁸ QCA Draft Decision, p. 23

³⁹ These firms will also receive a regulated return on equity that is based on a 10-year risk-free rate.

10 Complexity and implementation

In QTC's view, the QCA has overstated the complexity associated with the implementation of a simple and weighted trailing average approach.

The on-the-day approach requires adding up 20 numbers, dividing the total by 20, and repeating this task just prior to the start of each regulatory period. A simple trailing average requires adding up 20 numbers, dividing the total by 20, and repeating this task annually. Performing a simple task more frequently does not make the task more complex.

Implementing a weighted trailing average involves additional steps, but this does not make the approach complex, especially when the weights are based on information that is already used to determine the allowed revenues under the on-the-day approach. More importantly, a weighted trailing average delivers significant benefits in terms of achieving dynamic efficiency as new borrowings are compensated at the prevailing cost of debt. If adding additional steps to the estimation process produces a better estimate of the cost of debt, then those steps should be added.

10.1 More frequent estimates of the benchmark debt yield

The QCA intends to fully reset the benchmark cost of debt for the SEQ water retailers on an annual basis. This suggests that there is no problem with making annual estimates of the benchmark debt yield, which is the same requirement under a trailing average approach.

In regards to the cost of making more frequent estimates, the Reserve Bank of Australia (RBA) publishes non-financial corporate DRP estimates for target tenors of 3, 5, 7 and 10 years and broad A and BBB credit ratings. These estimates are produced by an independent and reputable third party, and are publicly available at no cost.

Although the RBA only produces estimates for the last business day of each month, a simple approach has been proposed by the AER to use these data to produce daily estimates of the benchmark debt yield⁴⁰. Methods are also available to extrapolate the Bloomberg 7-year BBB fair value yield to a 10-year tenor⁴¹.

10.2 Perceived issues with a weighted trailing average

The QCA does not support the use of a weighted trailing average due to perceived issues with greater complexity and a perceived lack of transparency of possible weighting approaches.

These issues have been addressed in Section 7.

Producing the best possible estimate of the benchmark cost of debt for an efficiently financed firm is an important regulatory objective. If adding additional steps to the estimation process produces a better estimate of the cost of debt, then those steps should be added.

⁴⁰ AER (April 2014), *Return on debt: Choice of third party data service provider issues paper*

⁴¹ QTC (October 2013), *An alternative extrapolation method to estimate the 10-year BBB+ corporate yield*

11 Trailing average vs hybrid approach

11.1 Preferred strategy in the presence of regulation

The QCA prefers the hybrid approach because it provides an allowance that more closely aligns with the preferred debt management strategy ‘in the presence of regulation’⁴².

The preferred risk management strategy in the presence of regulation is to align the firm’s base interest rate with the base interest rate in the regulated cost of debt, and this applies to all cost of debt approaches⁴³. The QCA has concluded that the preferred risk management strategy in the presence of the on-the-day approach is also the preferred risk management strategy in the presence of regulation in general, but this is not correct.

As explained in Sections 8 and 9, the firms that are regulated by the AER will receive a cost of debt allowance that is based on a trailing average of the total 10-year debt yield. These firms can be expected to align their base interest rate with base interest rate in the trailing average, but this will not be done with the specific swap strategy used under the on-the-day approach.

In its draft and final rule determinations the Australian Energy Markets Commission (AEMC) reached an important conclusion on how the regulated cost of debt should be determined:

*‘...the long-term interests of consumers would be best served by ensuring that the methodology used to estimate the return on debt reflects, to the extent possible, **the efficient financing and risk management practices that might be expected in the absence of regulation.**’⁴⁴
[emphasis added]*

The AEMC’s guidance is reflected in the AER’s trailing average cost of debt approach, which applies to the total 10-year debt yield. QTC considers the AEMC’s guidance to be relevant to the QCA’s review of its cost of debt approach.

The base interest rate hedging strategy used under the on-the-day approach was a rational response to a regulatory distortion rather than being reflective of how a comparable unregulated firm would manage interest rate risk. There is no reason to believe that a comparable unregulated firm would fully reset the base interest rate on its entire debt portfolio once every 5 years, or at any other frequency.

In QTC’s view, a trailing average approach should not incorporate any distortions associated with the on-the-day approach. This supports the use of a trailing average that applies to the total 10-year debt yield rather than the hybrid approach.

11.2 Consistency with the cost of equity

The QCA favours the hybrid approach because it allows the same prevailing risk-free rate to be used in the cost of debt and cost of equity. This issue has been addressed in Section 6.

⁴² QCA Draft Decision, p. 31

⁴³ Assuming it is possible to implement the matching strategy in practice.

⁴⁴ AEMC (November 2012), *Final Rule Determination, Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services*, p. 73

11.3 'Financial buffer' during major crisis periods

The QCA suggests that the hybrid approach will provide regulated firms with a 'financial buffer' during major crisis periods:

'This approach will also protect regulated firms during a major financial crisis that occurs during the regulatory cycle (i.e. after rates are set). During periods of financial crisis, investors will tend to move out of risky assets and into government debt resulting in the dual effect of a reduction in the risk-free rate and an increase in the debt risk premium.'

*In these circumstances, under a hybrid approach, regulated firms will generally be receiving a higher risk-free rate (based on the prevailing rate at the beginning of the regulatory period) than actual debt costs and a trailing average debt risk premium which aligns with their actual debt costs assuming a staggered debt profile (updated annually during the regulatory period). This will provide them with a financial buffer in times of a crisis.'*⁴⁵

It is reasonable to assume that a regulated firm would have used swaps to lock in a fixed base interest rate for the term of the regulatory period at the same time as the setting of the risk-free rate in the regulated cost of debt (ie, prior to the major financial crisis). As a consequence, any subsequent fall in the risk-free rate will have no effect on the firm's cost of debt relative to the regulated cost of debt⁴⁶.

Based on these considerations, it is unclear how the hybrid approach will provide regulated firms with a financial buffer during a major financial crisis.

11.4 Signals for efficient investment

The QCA states that the hybrid approach provides better economic signals for new investment than a trailing average that applies to the total 10-year debt yield.

If a weighted approach is used, there will be no material difference in outcomes between the trailing average and hybrid cost of debt approaches (refer Table 3 in Appendix B).

The preferred risk management strategy in the presence of regulation is to match actual costs with the benchmark allowance. This applies to all regulated cost of debt approaches.

There is no requirement for the term of the risk-free rate used in the trailing average approach to match the term of the risk-free rate in the cost of equity.

A trailing average approach should not incorporate any distortions associated with the on-the-day approach.

The AER concluded that applying a trailing average to the total 10-year benchmark debt yield will produce a cost of debt that is commensurate with the efficient financing costs of a benchmark firm.

IPART has also decided to give weight to the 10-year average of the 10-year total debt yield when calculating the regulated cost of debt.

⁴⁵ QCA Draft Decision, p. 32

⁴⁶ This example highlights a significant flaw in the Economic Regulation Authority of Western Australia's (ERA) proposal to fully reset the DRP annually while fixing the base rate for the term of the regulatory period. If the base rate was set just prior to a major financial crisis, the prices paid by consumers would reflect the higher base rate at the start of the regulatory period and a sharply rising DRP during the regulatory period.

From a consumer perspective, the hybrid approach has the undesirable feature of producing potentially large step-changes in the cost of debt at the start of each regulatory period. This is particularly relevant if the risk-free rate in the cost of debt is set just prior to the start of a major financial crisis.

Based on these considerations, QTC considers a trailing average that applies to the total 10-year debt yield to be the more appropriate than the hybrid approach.

12 Comments on the QCA's proposed position

The QCA's reasons for favouring the current on-the-day approach over a trailing average approach are summarised below, along with QTC's responses:

The on-the-day approach provides more efficient investment signals compared to both trailing average approaches

The simulation analysis presented in Appendix B does not support the claim the more efficient investment signals are provided under the on-the-day approach. This applies to existing and new debt.

The on-the-day approach is simpler and less costly to implement

In QTC's view, there is no difference in complexity when calculating the cost of debt under the on-the-day and trailing average approaches, especially once the required calculations have been programmed in a spreadsheet.

In regards to the cost of implementation, the QCA recently announced that it intends to fully reset the benchmark cost of debt for the SEQ water retailers on an annual basis using an on-the-day approach. In reaching this decision the QCA acknowledged that the cost of implementation would be similar under the on-the-day and trailing average approaches. This suggests that the absolute cost and level of complexity associated with making annual estimates is reasonable.

A continuation of the current approach will contribute to regulatory certainty

The current on-the-day approach implies the use of a debt management strategy that is inconsistent with well-established financial risk management principles and cannot be implemented in practice. QTC does not agree that regulatory certainty is a valid reason for retaining a cost of debt approach that is fundamentally flawed.

The on-the-day approach provides adequate allowances for interest rate and refinancing risk

As explained in Section 2, refinancing risk is managed with a strategy, not an allowance. To provide correct compensation for refinancing risk, the regulated cost of debt approach must reflect the practice of maintaining a staggered debt maturity profile out to 10 years. This cannot be achieved with the on-the-day approach because it implicitly assumes that the firm's entire debt balance matures at a single point in time. As a consequence, the time series properties of the regulated cost of debt produced by the on-the-day approach will differ significantly from the annual cost of debt incurred by an efficiently financed firm.

The on-the-day approach uses the same prevailing risk-free rate as the cost of equity

Using the same risk-free rate in the cost of debt and cost of equity may be the QCA's preference, but it cannot be considered to be an 'advantage' of the on-the-day approach.

As explained in Section 6, Lally has advised the QCA that satisfying the NPV=0 principle does not require the term of the risk-free rate in the cost of equity to match the term of the risk-free rate in a trailing average that applies to the total debt yield.

12.1 Implications for price and performance monitoring

Unitywater and QUU will both be subject to annual performance monitoring by the QCA from 1 July 2015. Gladstone Area Water Board (GAWB) will be subject to price monitoring by the QCA from the same date. The purpose of these monitoring arrangements is to identify any abuse of monopoly power by these businesses when setting prices and revenues.

Each business has expressed support for a weighted trailing average approach that applies to the total 10-year benchmark debt yield.

The QCA will not prescribe a WACC to be used by the businesses, however a WACC estimate will still be produced. QTC assumes that the QCA will compare its cost of debt estimate to the benchmark cost of debt used by the businesses in their pricing decisions. If the QCA retains the on-the-day approach or adopts the hybrid approach, differences between the QCA's cost of debt estimate and the weighted trailing average estimate will naturally occur.

If the QCA's estimate is lower than the estimate used by the business, it cannot be reasonably argued the business was abusing its monopoly power, especially when it has used a benchmark cost of debt approach that is broadly consistent with the approach used by the national regulator.

12.2 Questions for the QCA

The Draft Decision raises a number of issues that require further clarification:

1. Does the QCA agree with Lally's September 2010 advice which states that the NPV=0 principle will not be violated if the term of the risk-free rate in the cost of equity differs from the term of the risk-free rate in a trailing average that applies to the total debt yield⁴⁷?
2. If a regulated firm uses interest rate swaps to lock in a fixed base rate during its rate reset period, how does the hybrid approach provide a 'financial buffer' to the firm during a major financial crisis?
3. As the RAB and benchmark gearing are already used to determine the dollar value of the regulated cost of debt allowance under the on-the-day approach, does the QCA consider it appropriate to use the same benchmark data, in conjunction with the prevailing benchmark debt yield, to calculate a weighted trailing average cost of debt?
4. Does the QCA agree that it is the structure of a CDS contract, rather than a lack of liquidity or because contracts are not available on the desired bonds, that makes it unsuitable for hedging the DRP under the on-the-day approach?

Responses to these questions will provide stakeholders with a better understanding of the reasoning behind some of the key conclusions reached in the Draft Decision.

⁴⁷ Lally, M. (September 2010), *The appropriate term for WACC parameters for the SEQ interim price monitoring*

13 Debt raising costs

The QCA considers that the debt raising cost allowance should only include the direct costs recommended by PwC, which do not include the cost of early debt issuance. The QCA also considers that there are difficulties with estimating these costs due to uncertainty over the length of the early issue period and the characteristics of the short-term investment⁴⁸.

In QTC's view, compensation should be provided for all efficiently incurred debt raising costs. Whether those costs are direct or indirect is not important. If the practice of issuing new debt early to ensure that funds are available to repay a soon-to-mature borrowing is efficient, then compensation should be provided for the costs associated with this practice.

13.1 Length of the early issue period

Standard & Poor's has set out its expectations for how an investment-grade corporate should approach the task of refinancing a soon-to-mature borrowing:⁴⁹

For the Australian investment-grade corporates, we expect to see a measured and logical approach to meet upcoming debt maturities.

To avoid negative rating consequences, the ideal progression would be:

- 12-to-18 months ahead of maturity, the company would have a detailed and credible refinancing plan (including a contingency plan);*
- No less than six months ahead of the maturity, the company would have documentation substantially in place for the replacement debt issue/s; and*
- **No less than three months ahead of maturity, the refinancing would be essentially completed, committed, or underwritten.**’ [emphasis added]*

This suggests that an early issue period of 3 months is appropriate, which is consistent with the approach set out in QTC's cost of debt submission⁵⁰.

13.2 Characteristics of the short-term investment

The most appropriate short-term investment is one that does not change the credit risk exposure of the borrower. As such, the funds raised from the early debt issue should be invested in a 3-month risk-free asset. As the 3-month risk-free rate is not readily observable, it is reasonable to use the 3-month bank bill swap rate (BBSW) as the short-term investment rate⁵¹. This is consistent with the approach set out in QTC's cost of debt submission.

In QTC's view, the debt raising cost allowance should include the costs of issuing new 10-year debt 3 months early to ensure that funds are available to repay a soon-to-mature borrowing. The assumed investment rate should be 3-month BBSW.

⁴⁸ QCA (August 2014), *Cost of debt estimation methodology*, pp. 13-14

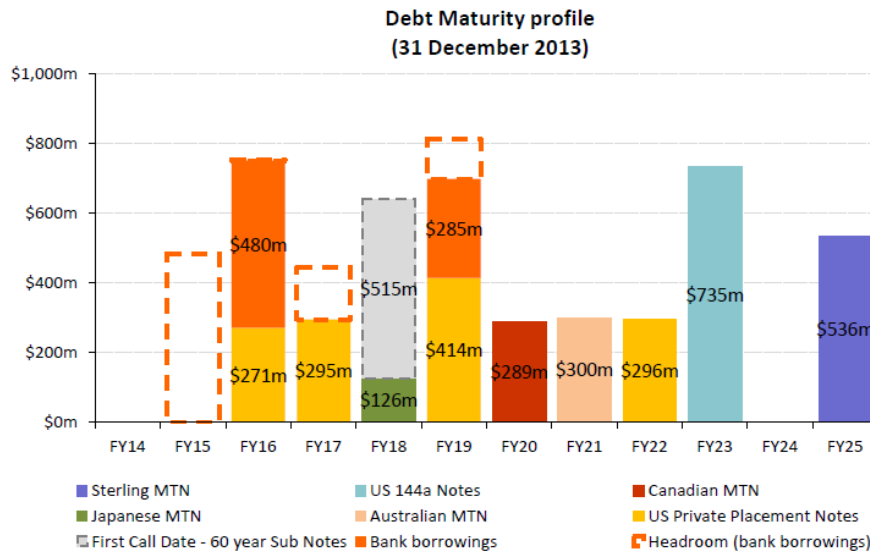
⁴⁹ S&P (April 2008), *Refinancing and liquidity risks remain, but Australia's rated corporates are set to clear the debt logjam*

⁵⁰ QTC (January 2014), *Cost of debt submission to the Queensland Competition Authority*, p. 12

⁵¹ Due to short tenor involved, a 3-month risk-free rate will typically not be significantly lower than 3-month BBSW.

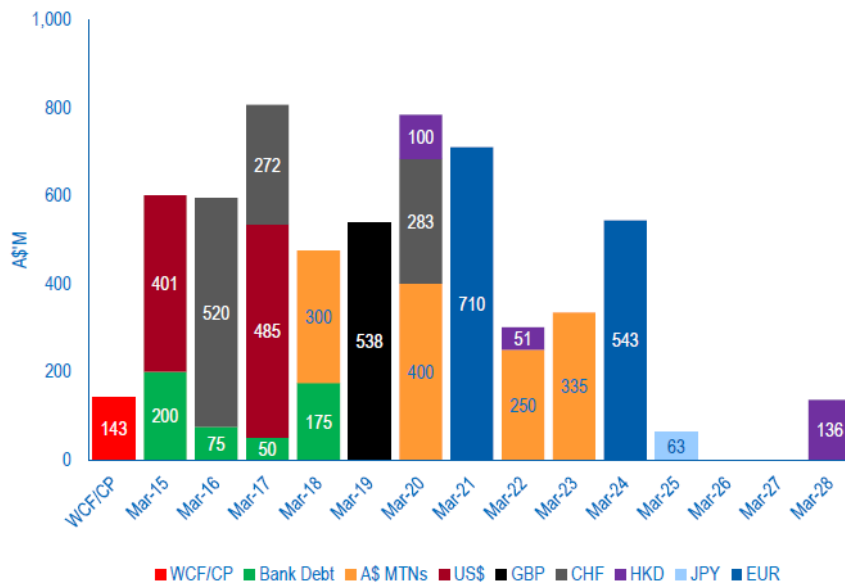
Appendix A: Debt maturity profiles of regulated utilities

APA Group



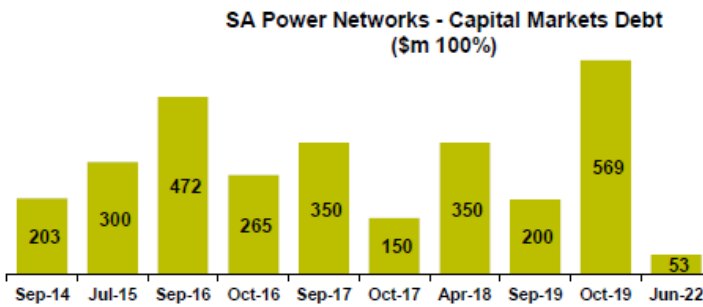
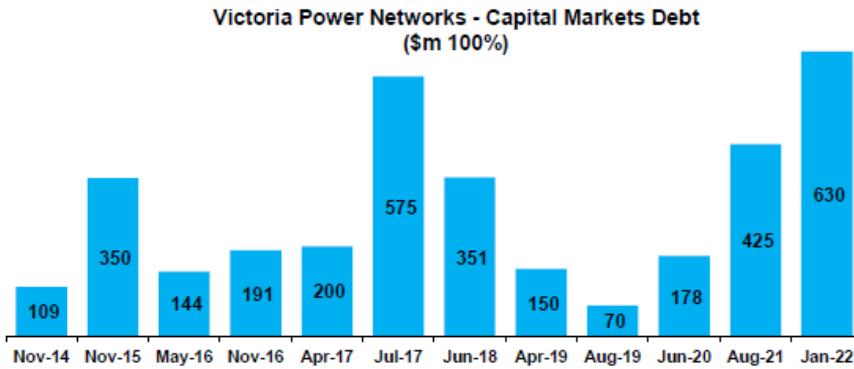
Source: APA investor information and 1H14 result highlights – April 2014

SP AusNet



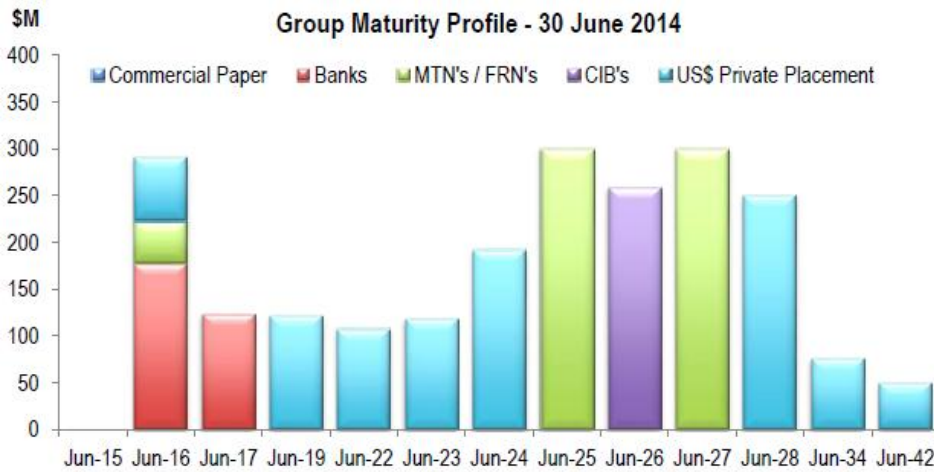
Source: SP AusNet full year results 2014 results for the financial period ended 31 March 2014

Victoria and South Australia Power Networks



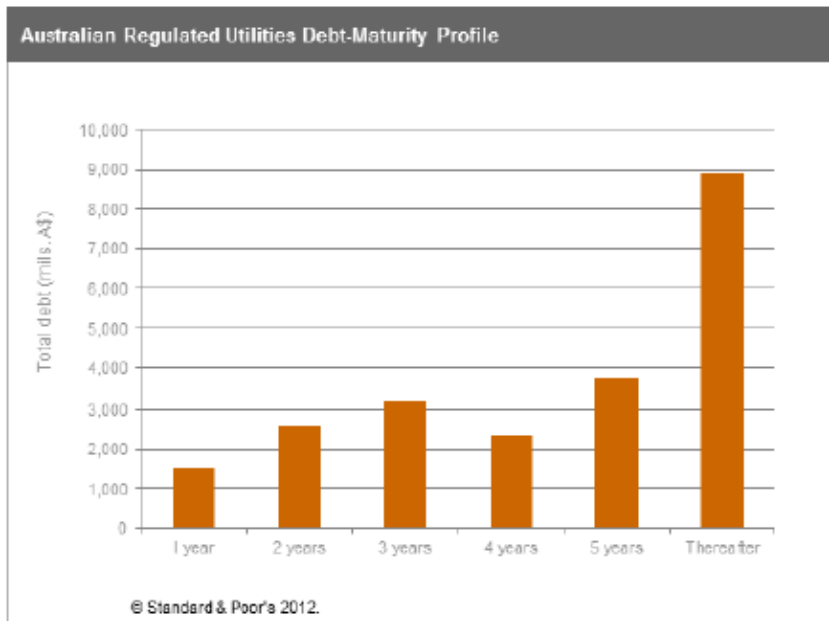
Source: Spark Infrastructure – HY 2014 results – August 2014

Envestra



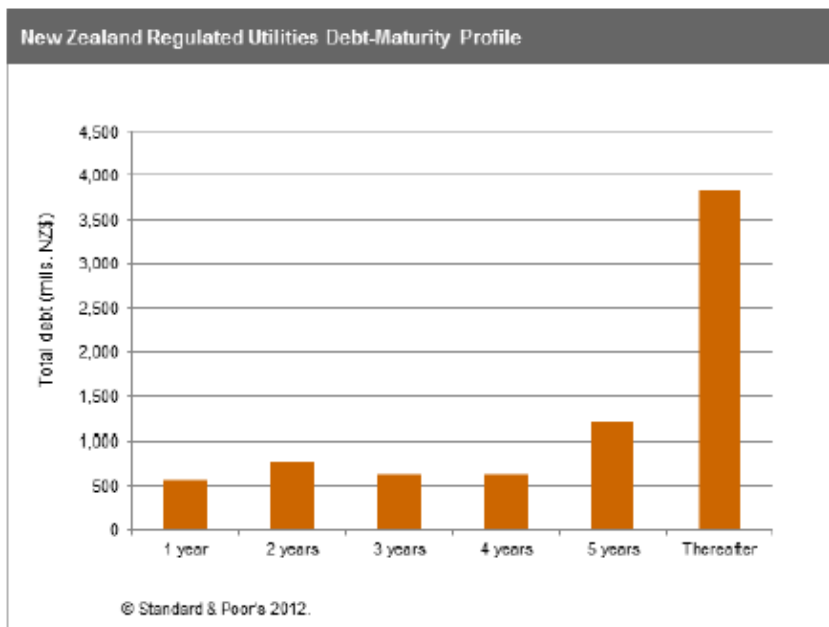
Source: Envestra full year results to 30 June 2014

Australian regulated utilities



Source: Standard & Poor's, Industry report card: Australian and New Zealand network utilities maintain stable credit quality, November 2014

New Zealand regulated utilities



Source: Standard & Poor's, Industry report card: Australian and New Zealand network utilities maintain stable credit quality, November 2014

Appendix B: Simulation analysis

Appendix B sets out a model for simulating the 10-year risk-free rate and DRP over long time periods.

Due to a lack of long-term historical data on Australian corporate yields, the model parameters have been estimated using monthly 10-year risk-free rates and DRPs from the US market between April 1953 and August 2014. The data has been sourced from the Federal Reserve Bank of St. Louis.

The simulation model captures the mean-reverting characteristics of the DRP and the negative correlation between changes in the DRP and changes in the risk-free rate.

B.1: Historical US data

Figure 1 displays the monthly 10-year DRPs used to estimate the model parameters

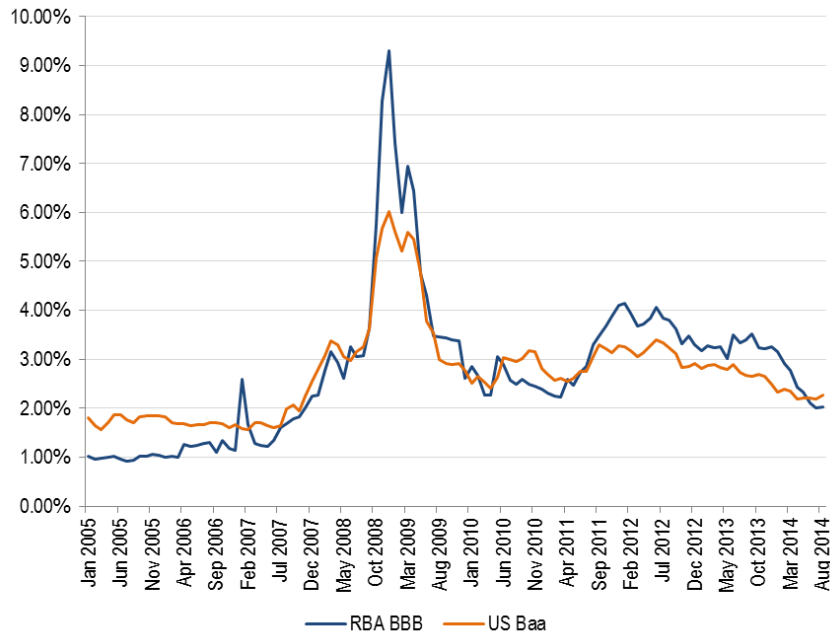
FIGURE 1: MOODY'S US 10-YEAR BAA DEBT RISK PREMIUM – MONTHLY DATA



Source: Federal Reserve Bank of St. Louis

The US data is broadly consistent with the DRPs in the Australian market for the period where reliable estimates are available, as shown in Figure 2:

FIGURE 2: RBA AND MOODY'S 10-YEAR DRPS



Source: RBA, Federal Reserve Bank of St. Louis

B.2: Simulating the DRP

QTC has used the monthly historical DRPs in Figure 1 to develop a simple mean-reverting model of the DRP:

$$DRP_t = DRP_{t-1} + \alpha \cdot (\theta - DRP_{t-1}) \tag{Equation 1}$$

where:

- DRP_t = DRP at month t
- DRP_{t-1} = DRP at month $t-1$
- α = speed of monthly mean reversion
- θ = long-term average DRP

Equation 1 can be rearranged in terms of the monthly percentage change in DRP:

$$(DRP_t - DRP_{t-1}) / DRP_{t-1} = -\alpha + (\alpha \cdot \theta) \cdot (1 / DRP_{t-1}) \tag{Equation 2}$$

The mean reversion parameter (α) and long-term average DRP (θ) in Equation 2 have been estimated by regressing the monthly percentage change in the DRP on $(1 / DRP_{t-1})$. The regression results are summarised in Table 1:

TABLE 1: ESTIMATED REGRESSION COEFFICIENTS

Parameter	Estimated value	t-statistic	p-value (%)	Comments
Intercept	-0.02346	-2.92	0.3601	$-\alpha = \text{Intercept}$
Slope	0.00045	4.29	0.0020	$\theta = -\text{Slope} / \text{Intercept}$
Standard error (%)	10.58			

The estimated intercept coefficient equals $-\alpha$ (ie, 0.02346) and the long-term average DRP equals the estimated slope coefficient divided by α (ie, $0.00045 \div 0.02346 = 1.9$ per cent).

The estimated coefficients in Table 1 have been used to simulate random monthly percentage changes in the DRP, which have been used to produce a random mean-reverting time series of the DRP on a monthly basis:

$$\% \Delta DRP_t = -0.02346 + 0.00045 \cdot (1/DRP_{t-1}) + 0.1058 \cdot N(0,1) \quad \text{[Equation 3]}$$

where $N(0,1)$ is a standard normal random variable.

B.3: Simulating the risk-free rate

The simulated risk-free rate is based on the following equation:

$$(RF_t - RF_{t-1}) / RF_{t-1} = -\lambda + (\lambda \cdot \varphi) \cdot (1/RF_{t-1}) \quad \text{[Equation 4]}$$

where:

- RF_t = risk-free rate at month t
- RF_{t-1} = risk-free rate at month $t-1$
- λ = speed of monthly mean reversion
- φ = long-term average risk-free rate

Although the statistical evidence of mean reversion in the risk-free rate is very weak, a mean reversion parameter of $\lambda=0.01$ has been used to prevent the randomly generated risk-free rates from taking on unrealistically extreme values.

The long-term average risk-free rate (φ) is assumed to be 5.1 per cent, which produces a long-term average total cost of debt of 7.0 per cent (based on the long-term average DRP of 1.9 per cent). The standard deviation of the monthly percentage changes in the 10-year risk-free rate is 4.48 per cent.

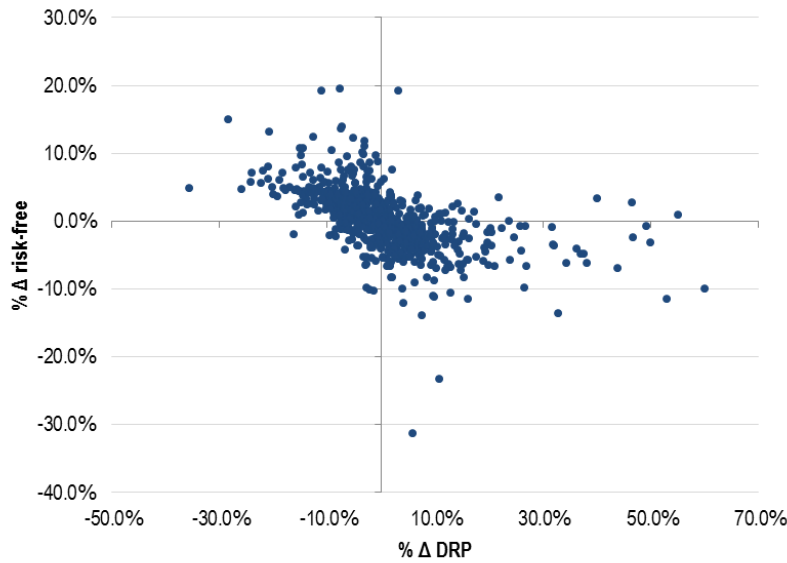
The parameters have been used to simulate random monthly percentage changes in the risk-free rate, which have been used to produce a random time series of the risk-free rate on a monthly basis:

$$\% \Delta RF_t = -0.0100 + 0.00051 \cdot (1/RF_{t-1}) + 0.0448 \cdot Z(0,1) \quad \text{[Equation 5]}$$

where $Z(0,1)$ equals a standard normal variable that is correlated with $N(0,1)$ in Equation 3. The correlation between $N(0,1)$ and $Z(0,1)$ is **-0.53**, which is based on the correlation between

the monthly percentage change in the DRP and the monthly percentage change in the risk-free rate, as shown in Figure 3.

FIGURE 3: RELATIONSHIP BETWEEN CHANGES IN THE RISK-FREE RATE AND DRP (US DATA)



B.4: Simulation results

Mismatches on existing debt

The results in Table 2 assume that the regulated firm is funded with a portfolio of floating-rate bonds with annually spaced maturities from 1 to 10 years. An interest rate swap is used to lock in the base interest rate for the term of the regulatory period. The debt balance is constant.

The regulated cost of debt is determined using the on-the-day approach with 1- and 5-year resets. As the base interest rate is hedged, the only source of mismatch is the average DRP on the debt portfolio relative to the prevailing DRP at the start of each regulatory period.

20,000 simulations were performed over a 200 year period. For each simulation, the standard deviation of the 200 annual mismatches was recorded. The results in Table 2 are the average standard deviations from the 20,000 simulations.

TABLE 2: MISMATCH ON EXISTING DEBT

	On-the-day approach with 1-year resets	On-the-day approach with 5-year resets
Average standard deviation of annual mismatches (bps)	87	73

The trailing average and hybrid approaches produce a cost of debt that matches the benchmark firm's cost of debt, so the annual mismatches are always zero when the debt balance is constant.

Mismatches on a new 10-year borrowing

The results in Table 3 relate to the mismatch on a new borrowing (not a refinancing) that is funded with a single 10-year fixed/floating-rate borrowing. The actual compensation received over the 10-year borrowing term is based on a simple trailing average and QTC's weighted trailing average applied to the 10-year debt yield/DRP.

20,000 simulations were performed over a 10-year borrowing period. For each simulation the difference between the prevailing 10-year debt yield/DRP at the time of the borrowing and the average compensation received over the next 10-years was recorded. The results in Table 3 are the standard deviations of the 20,000 simulated mismatches.

TABLE 3: MISMATCH ON A NEW 10-YEAR BORROWING – TRAILING AVERAGE TOTAL COST OF DEBT AND DRP

	Simple trailing average	QTC weighted trailing average
Standard deviation (bps) - Total yield	84	43
Standard deviation (bps) - DRP	70	38

The results in Table 4 relate to the mismatch on a new borrowing (not a refinancing) that is funded with a single 10-year floating rate borrowing. The actual compensation received over the 10-year borrowing term is based on the on-the-day approach with 1- and 5-year resets. The base interest rate is hedged, so the only source of mismatch is the prevailing 10-year DRP at the time of the borrowing relative to the average DRP compensation over the next 10 years.

A total of 20,000 simulations were performed over a 10-year borrowing period. For each simulation the difference between the prevailing 10-year DRP at the time of the borrowing and the average DRP compensation received over the next 10-years was recorded. The results in Table 4 are the standard deviations of the 20,000 simulated mismatches.

TABLE 4: MISMATCH ON A NEW 10-YEAR BORROWING – ON-THE-DAY DRP

	1-year reset	5-year reset
Standard deviation (bps)	88	61

The main observations from the simulation results are as follows:

- When the debt balance is constant the on-the-day approach produces large annual mismatches between the prevailing DRP at the start of each regulatory period and the average DRP on the debt portfolio (Table 2).
- By design, when the debt balance is constant the trailing average and hybrid approaches do not produce any annual mismatch between the regulated cost of debt and the average 10-year total yield/DRP on the debt portfolios.
- In the presence of new borrowings there is no material difference between the trailing average and hybrid approaches when a weighted approach is applied (Table 3).
- In the presence of new borrowings the weighted trailing average produces mismatches that are significantly smaller than the on-the-day approach, especially compared to a 1-year rate reset period, which is the QCA's proposed approach for the water retailers (Tables 3 and 4).

- The simulated mismatches for a 5-year rate reset in Table 4 assume the new borrowing is made at the start of the regulatory period, so there is no mismatch during the first 5 years of the borrowing. In practice, some borrowings will be made during the regulatory period, and the potential mismatch on these borrowings will be higher compared to a borrowing made at the start of the regulatory period. As a consequence, the mismatches for a 5-year rate reset in Table 4 should be viewed as a lower bound.
- The impact of the mismatches in Tables 3 and 4 on the firm's total cost of debt will depend on the size of the new borrowing relative to the existing debt balance.

B.5: Lally's NPV=0 analysis

Lally uses the following scenario to quantify the violation of the NPV=0 principle under the on-the-day approach⁵²:

- A regulated firm issues 10-year floating-rate debt with a DRP of 2.0 per cent.
- The same 2.0 per cent DRP is used in the regulated cost of debt for the first 5-year regulatory period.
- The DRP reverts to its long-term mean of 1.5 per cent by the start of the next 5-year regulatory period.
- A 1.5 per cent DRP is used in the regulated cost of debt for the second 5-year regulatory period.

In this scenario the regulated firm is correctly compensated in the first 5-year regulatory period and under-compensated by 0.5 per cent per annum in the second regulatory period. Lally shows that this mismatch is equivalent to 0.4 per cent of the initial book value of the firm, which is equivalent to understating the WACC by 3.6 basis points in perpetuity.

Lally considers a fall in the DRP from 2.0 per cent to 1.5 per cent over a 5-year period to be an extreme scenario, however a visual inspection of the DRPs in Figure 1 suggests that a 0.5 per cent change may be conservative⁵³. Furthermore, Lally assumes no further change in the DRP beyond the end of the second 5-year regulatory period.

To address these issues, QTC has used the simulation model to simulate the 10,000 random departures from NPV=0 over a 200 year period. As expected, the average departure is zero, however the standard deviation of the simulated departures is 9.0 basis points (expressed in terms of mis-estimating the WACC in perpetuity).

The simulation results suggest that the 3.6 basis point estimate in Lally's example is conservative. A more realistic estimate of an extreme outcome would be a violation of NPV=0 that is equivalent to mis-estimating the WACC by ± 27 basis points in perpetuity (ie, a 3 standard deviation event).

The trailing average and hybrid approaches have implied debt management strategies that can be implemented in practice, so they both satisfy the NPV=0 principle regardless of changes in the total cost of debt or DRP.

⁵² Lally, M. (April 2010), *The appropriate term for the risk free rate and the debt margin*, pp. 36-41

⁵³ Lally (April 2010), p. 39