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Efficient regulatory benchmarks, and transitions, for the cost of debt

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Executive summary

1. The questions I have been asked and the summary of my answer to each is provided below. In answering this question, I distinguish between the risk free "base rate" rate of interest and the "credit risk" component (debt risk premium or DRP). The risk-free base rate is the component that can be manipulated by the business using interest rate swaps (and/or issuing floating base rate bonds). The DRP is always fixed at the time a debt is issued.

A. **What defines an efficient debt funding strategy for a regulated monopoly with high levels of sunk investment?**

2. An efficient debt funding strategy for a regulated monopoly with high levels of sunk investments is one that simultaneously manages refinance risk (the risk that lenders will not be willing to provide refinance for substantial amounts of debt falling due) and the risk of mismatch between the businesses' debt costs and the debt allowance as set under the regulatory regime.

3. Managing these risks are critical to managing insolvency/bankruptcy risk. If actual or perceived insolvency risk exists, the focus of the firm shifts from prudent decisions with the objective of maximising the long-term value of the assets to a short-term focus on generating enough cash to meet debt obligations falling due. Long term planning and investment are put on hold because equity holders and management (correctly) perceive that the firm will not make it to the long term unless it meets those debt obligations (at least not in its currently structured form).

B. **Given your answer to question A, what is an efficient debt funding strategy for Aurizon's regulated rail access operations given its current operating environment including the current regulatory regime?**

4. The QCA has previously stated, and I agree, that the regulatory strategy that best manages insolvency risk given the QCA's on-the-day methodology for compensating for debt costs is known as the "hybrid" strategy. Under this strategy, the regulated business has:

   a. Issues N year floating rate debt (where N is around 10-years). Such debt contracts specify that the business pay the "floating" (i.e., updated every quarter) 3-month bank bill swap rate (BBSW) plus a fixed debt risk premium (DRP). Under this approach the risk-free base rate of interest is floating while the credit risk component (DRP) is fixed; but

   b. This underlying floating base rate of interest is converted into a fixed base rate of interest at the beginning of each regulatory period by entering a pay fixed receive BBSW swap rate for the length of the regulatory (R years).

5. Consequently, the cost of debt for the business during the regulatory period is equal to the R year swap rate at the beginning of the regulatory period plus a trailing average debt risk premium (measured relative to the N-year swap rate at the time debts were issued (if the debt is 10-year debt then N=10)). Given that R is typically less than N and the yield curve is upward sloping, the hybrid strategy will have a lower expected interest cost than the trailing average strategy.

C. Given your answer to question B, what risks and costs would be created for Aurizon if the QCA implemented compensation for the cost of debt based on a trailing average from FY28 onwards without any transition?

6. Given Aurizon's efficient debt management strategy is the hybrid then, in 2028, it will have a base rate of interest that 100% reflects prevailing market conditions in 2028. Imposing a trailing average at that time, which 90% reflects historical market conditions over the previous 9 years, has a small but non-trivial risk of forcing a business Aurizon's position into insolvency/bankruptcy. This will be the case if interest rates rise precipitously between now and 2028.

7. Even if it does not result in actual insolvency, the same policy may create heightened insolvency risk. Either of these scenarios (actual insolvency or heightened risk of insolvency) would be very costly to both the regulated business and the efficient operation of that business (i.e., to customers) for the reasons described in my answer to Question A. These risks are especially heightened for Aurizon relative to the other businesses regulated by the QCA because the next regulatory reset is so distant from now.

D. How could the QCA amend its draft report approach for Aurizon to reduce or eliminate the risks and costs identified in your answer to question C?

8. The QCA could materially reduce this risk (and the associated costs) by simply adopting the hybrid debt management strategy as the benchmark used to set compensation for the cost of debt. Given this is already the efficient debt management strategy for a firm in Aurizon's position no transition would be required. This has been the approach of the Western Australian and New Zealand economic regulators. There would be other advantages to this approach discussed in relation to Question E and F. Alternativity, the QCA could put in place a replicable transition from the current efficient debt management strategy (the hybrid) to the trailing average.

E. To what extent is weighting of the trailing average cost of debt (or DRP under the hybrid approach) appropriate?

9. I am instructed that Aurizon's regulatory asset base may not be stable in the future (e.g., be materially declining in the future due to accelerated depreciation and may, or may not, experience large increases in the event that discrete capacity expansions

are undertaken) and that the QCA's estimate of the benchmark efficient gearing may also change.

10. In this context, if the QCA adopts a trailing average benchmark it should be weighted by the amount of debt that must be raised in each year (a function of the change in the RAB and any change in assumed gearing).[1] If the QCA were to adopt a simple trailing average that did not reflect the actual debt funding requirements then this could materially raise regulatory mismatch (and, therefore, insolvency) risk.

11. Under the hybrid approach there is less of an imperative to weight by debt funding requirements in each year because 100% of the base rate is updated at the beginning of every regulatory period (both in the regulatory benchmark and by the business). Consequently, the prospect for regulatory mismatch risk is limited to the trailing average DRP.

F. Please explain the relative advantages and disadvantages of the QCA draft report approach and the alternative approaches you have identified in your answer to question D?

12. The hybrid benchmark has the following advantages over the simple trailing average cost benchmark for setting the cost of debt for Aurizon:

   a. The hybrid benchmark does not expose Aurizon to untenable risk of insolvency/bankruptcy;

   b. The hybrid benchmark does not require a transition because it is consistent with the currently efficient debt management strategy;

   c. The hybrid benchmark will have lower expected costs than the trailing average due to the use of a shorter term for the base rate than 10-years; and

   d. Due to its greater reliance on prevailing market interest rate, the hybrid benchmark:

      i. does not have the incentive problems associated the unweighted trailing average;

      ii. can avoid the complexity associated with a weighted trailing average;

      iii. is more easily replicable than the unweighted trailing average and, therefore, has lower regulatory mismatch risk;

      iv. is more able to flexibly deal with material changes in the Aurizon's RAB over time; and

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[1] With large capital investments this could involve weights well in excess of 10% in a given year and, alternatively, with sufficiently accelerated depreciation this could be close to zero or even negative in a given year. If the QCA were to adopt a simple trailing average that did not reflect the actual debt funding requirements then this could materially raise regulatory mismatch (and, therefore, insolvency) risk.

> v.   generally, preserves greater flexibility for any future changes in the
> benchmark debt management strategy (noting that it takes 10-years to
> transition into or out of a 10-year trailing average).

13.   I do not consider that there are any significant disadvantages associated with the
hybrid method relative to the trailing average method.

G. Please advise whether the QCA's proposal to, when setting the cost of debt, rely solely on
estimates of 10-year BBB+ corporate bond yields as published by the RBA is good
regulatory practice?

14.   I consider that there is compelling evidence that an average of multiple third-party
estimates of the cost of debt (e.g., from RBA, Bloomberg and Thomson Reuters) will
be more accurate and reliable than an estimate based on the RBA alone. This is
partly due to the specific way the RBA index is constructed and partly because an
average of a larger sample is generally more reliable.,

H. Aurizon's network is an input into supplying coal haulage operations and, for some
institutions, lending to a stand-alone rail manager of the CQCN would be in contravention
of "environmental, social, and governance" (ESG) criteria that they have adopted. In your
opinion, what implications might this have?

15.   These circumstances may raise the efficient cost of debt for Aurizon relative to other
firms with the same credit rating that are not affected in the same way by ESG
criteria. If so, the QCA may need to implement a bespoke amendment to the cost of
debt estimates from the RBA, Bloomberg and Thomson Reuters.

1   Introduction

16. My name is Tom Hird, and I have a Ph.D. in Economics from Monash University and over 25-years' experience as a professional economist.

17. I have been engaged by Aurizon Network (**Aurizon**) to prepare an expert report addressing the following instructions and questions which I answer in the rest of this report.

<u>Instructions</u>

The expert is instructed that Aurizon's coal haulage rail network is regulated under an "on-the-day" approach to the cost of debt. Under this approach, the cost of debt is reset close to the beginning of each regulatory period based on the estimated cost of 10-year BBB+ fixed rate debt and prevailing risk-free rates at that time. This was the approach used to set debt compensation in the current period (FY18 to FY23) and it will be the implied approach used to set debt compensation for the cost of debt in the period (FY24 to FY27). The QCA is proposing, in its June 2021 Rate of Return review draft report, to change this method to a simple (unweighted) 10-year trailing average of 10-year fixed rate debt. This would only come into force for Aurizon Network for the regulatory period commencing in FY28 for a term to be determined. The same draft report states that the QCA proposes not to require transition arrangements to implement the new 10-year trailing average debt management strategy.

Questions

The expert is to provide a report that addresses the following questions:

A. *What defines an efficient debt funding strategy for a regulated monopoly with high levels of sunk investment? Please describe the extent to which this depends on managing refinance risk and the risk of mismatch between the businesses' debt costs and the debt allowance as set under the regulatory regime?*
B. *Given your answer to question A, what is an efficient debt funding strategy for Aurizon's regulated rail access operations given its current operating environment including the current regulatory regime?*
C. *Given your answer to question B, what risks and costs would be created for Aurizon if the QCA implemented compensation for the cost of debt based on a trailing average from FY28 onwards without any transition?*
D. *How could the QCA amend its draft report approach for Aurizon to reduce or eliminate the risks and costs identified in your answer to question C? In answering this question, please have regard to:*
    a. *The Western Australian Economic Regulation Authority's approach to implementing a hybrid of the trailing average and on-the-day approaches to compensating for the cost of debt;*

    b. *The AER's approach to transitioning from the on-the-day approach to a 10-year trailing average; and*

    c. *Any other concepts or regulatory precedent you consider relevant.*

E. *To what extent is weighting of the trailing average cost of debt (or DRP under the hybrid approach) appropriate? In answering this question, please consider the possibility that Aurizon's regulatory asset base may not be stable in the future (e.g., be materially declining in the future due to accelerated depreciation and may, or may not, experience large increases in the event that discrete capacity expansions are undertaken) and that the QCA's estimate of the benchmark efficient gearing may also change?*

F. *Please explain the relative advantages and disadvantages of the QCA draft report approach and the alternative approaches you have identified in your answer to question D? Please identify which of these approaches is most desirable in relation to:*

    a. *Most accurately compensating for the efficient funding costs of a benchmark efficient firm in the same operating environment as Aurizon's network business;*

    b. *Minimising the expected level of efficient funding costs incurred by a benchmark efficient firm in the same operating environment as Aurizon (and, therefore, minimising the amount paid by Aurizon's customers);*

    c. *Minimising the complexity, and maximising the flexibility, of the regulatory regime to changing future circumstances (including instability in Aurizon's regulatory asset base).*

G. *Please advise whether the QCA's proposal to, when setting the cost of debt, rely solely on estimates of 10-year BBB+ corporate bond yields as published by the RBA is good regulatory practice?*

H. *Aurizon's network is an input into supplying coal haulage operations and, for some institutions, lending to a stand-alone rail manager of the CQCN would be in contravention of "environmental, social, and governance" (ESG) criteria that they have adopted. In your opinion, what implications might this have, either now or in the future, for:*

    a. *The debt costs for a benchmark efficient business in Aurizon's operating environment; and*

    b. *The QCA's framework for estimating benchmark efficient debt costs.*

2 Question A: What defines an efficient debt management strategy

What defines an efficient debt funding strategy for a regulated monopoly with high levels of sunk investment? Please describe the extent to which this depends on managing refinance risk and the risk of mismatch between the businesses' debt costs and the debt allowance as set under the regulatory regime?

2.1 Refinance risk and regulatory mismatch risk

18. An efficient debt management strategy for a regulated monopoly must manage two distinct sources of risk:

    a. Refinance risk: which is the risk that the business is unable to refinance debt as it comes due (or only able to do so at very disadvantageous terms); and

    b. Regulatory mismatch risk: which is the potential for a mismatch between the regulated firm's actual debt costs and the compensation for debt costs given by the regulator.

19. Refinance risk can occur if a firm has large amounts of debt requiring refinance when either: debt markets in general are not functioning well; or the firm itself is experiencing financial stress such that debt markets are wary of lending to it. Examples of the former include the financial crisis experienced globally in 2008/09 but also regional financial crises such as the 2010 to 2015 Eurozone crisis and the 1997 Asian financial crisis. Examples of the latter might include periods of heightened uncertainty about the firm's ongoing creditworthiness, such as an airport in a pandemic or a stand-alone thermal coal railway company in a period of heightened uncertainty about climate policy and/or the failure of major coal customers.

20. Consistent with the need to limit refinance risk, evidence from businesses regulated by the Australian Energy Regulator (**AER**) is that the formal debt management strategies adhered to by regulated businesses typically require no more than 15% to 25% of debt can fall due in a given year.[2] The QCA has also focussed on refinance risk as an explanation for why businesses tend to have staggered maturity profile:[3]

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[2]   AER, *Explanatory Statement to the Rate of Return guideline*, December 2013, p. 139.

[3]   QCA, Trailing average cost of debt, April 2015, pp. 8-9.

... regulated firms tend to stagger their debt such that there is not too high a proportion of existing debt that is maturing in any one year (QCA, 2014d: 14; QTC, 2014c: 6; Lally, 2015: 10–11).

21. Regulatory mismatch risk will exist where the regulated business's debt management strategy gives rise to an actual cost of debt that is materially different to the cost of debt compensation set by the regulator. This might arise because:

   ▪ The regulator sets cost of debt compensation based on the costs of a prudent debt management strategy, but the regulated business chooses (for whatever reason) to depart from that; or

   ▪ The regulator sets cost of debt compensation based on an imprudent debt management strategy (such as rolling over 1 year debt) and the regulated business is unwilling to adopt that strategy (e.g., because it exposes the business to undue refinance risk).

22. The QCA has recognised the imperative of managing regulatory mismatch risk for regulated businesses. [4]

   Regardless of the benchmark implemented by the regulator (i.e., on-the-day, trailing average, or hybrid), a firm subject to revenue or price determination has a strong incentive to 'match' that regulatory benchmark. This incentive arises because the regulator sets allowed revenues, and any difference between the allowed (i.e., benchmark) cost of debt and the firm's cost of debt will effectively flow to (or from) the firm's equity holders.

   If the benchmark firm is able to match the benchmark debt servicing costs relatively closely, it can substantially reduce this source of volatility to its equity holders (QCA, 2014d: 26). The regulator's specification of a benchmark, therefore, implies a corresponding debt management strategy for the regulated firm (Lally, 2014a: 8–9; SFG Consulting, 2012: 5).

   A firm subject to a different form of regulation (e.g., price monitoring) might have different incentives to match the regulatory benchmark.

23. Regulatory mismatch risk and refinance risk can interact. For example, imagine a regulator that set the cost of debt based on an "on-the-day" methodology such as the QCA has applied to Aurizon to date. Under this approach the cost of debt compensation the business receives during a regulatory period is based on the cost of debt prevailing at the beginning of the regulatory period. For the sake of illustration, imagine that, at the beginning of a regulatory period at time "t=0", the prevailing cost of debt was 3%.

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[4]   QCA, Trailing average cost of debt, April 2015, p. 9.

24. However, imagine that, notwithstanding the regulatory policy being clear, a regulated business did not manage its debt portfolio to this on-the-day regime. For example, imagine the regulated business relied solely on a single 15-year debt issued 10-years earlier at time "t=-10" at a time when debt costs were 10%.

25. In this scenario, the regulated business will have debt costs that are 7% higher than debt compensation over the regulatory period t=0 to t=5. This magnitude of difference between debt cost and debt compensation is likely to put the regulated business into financial distress by the end of that regulatory period (t=5). However, that is precisely when 100% of their debt (being a single 15-year bond issued at t=-5) falls due.

26. The need to refinance 100% of its debt at a time when the business is already in financial distress may mean the business is unable to refinance its debt (goes into insolvency/bankruptcy) or is forced to do so at very unfavourable terms (paying a 'financial distress' premium). Even if the latter is true (and insolvency/bankruptcy is avoided) the business's debt costs will again be higher than the regulator's compensation for debt costs by the value of the 'financial distress' premium[5] - creating heightened risk of future insolvency/bankruptcy risk.

27. In this example, regulatory mismatch risk creates the conditions (business specific financial distress) for the worst outcomes from refinance risk to be realised.

2.2 The primary goal of efficient debt management is to avoid insolvency/bankruptcy costs

28. If actual or perceived insolvency risk exists, the focus of the firm shifts from prudent decisions with the objective of maximising the long-term value of the assets to a short-term focus on generating enough cash to meet debt obligations falling due. Long term planning and investment are put on hold because equity holders and management (correctly) perceive that the firm will not make it to the long term unless it meets those debt obligations (at least not in its currently structured form).

29. In the finance literature it is recognised that high costs associated with insolvency/bankruptcy cause firms to both spread their debt maturities out through time and not to adopt extreme levels of gearing (despite tax advantages of gearing).

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[5] This assumes the regulator adopts a benchmark approach and does not raise its compensation based on the costs incurred by the regulated business.

Baxter (1967)[6] was one of the first to make this point but many authors have built on his insight since.[7]

30. Imprudent debt management structures (too high a gearing and/or too much debt falling due in any given period) exposes the firm to the "risk of ruin". Insolvency or near insolvency imposes costs on a range of parties, including:

   a. Debt investors: insolvency means that debt holders do not get paid when debts fall due (a technical default). Debt investors will typically incur significant costs to manage that disruption (such as curtailing consumption/investment in other activities or borrowing from third parties – often at penalty rates due to the financial distress caused by the original technical default). If they cannot manage the technical default, then they will themselves be rendered insolvent (unable to pay their debts as they fall due); and

   b. Equity investors: insolvency (or near insolvency) means that equity investors must stop receiving a dividend on their investment, which they have to manage in the same manner as debt investors and with analogous consequences. Equity investors will also suffer because the business's reputation as a reliable borrower will be damaged. Moreover, existing equity investors may be forced to participate in a rights issue and/or a public equity raising to address the insolvency. Both options are likely to involve substantial transaction costs for equity investors (including the dilution of the value of existing equity investors by new equity investors).

31. Depending on the nature of the contracts with debt holders, insolvency may also give rise to debt holders taking full or partial control of the company and, potentially, to bankruptcy proceedings. Protracted legal battles may ensue between debt and equity holders (and between different groups of debt/equity holders) over the future of the firm. This may paralyse management, with the principal focus being on the division of the existing value of the firm (and debt holders attempting to ensure the maximum repayment of their debts) rather than on maximising the total value of the firm (including the equity stake).

32. As described above, it at this point long term planning and investment are put on hold precisely because the long-term future of the firm (as currently structured) is in doubt.

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[6]   Baxter, N., "Leverage, Risk of Ruin and the Cost of Capital," Journal of Finance 22, September 1967, pp. 3956-403.

[7]   For example: Stiglitz, J.E., "A Re-Examination of the Modigliani-Miller Theorem," American Economic Review 59, December 1972, pp. 784-793; Kraus, A. and R.H. Litzenberger, "A State Preference Model of Optimal Financial Leverage," Journal of Finance, September 1973, pp. 911-922; and Kim, E.H., "A Mean-Variance Theory of Optimal Capital Structure and Corporate Debt Capacity," Journal of Finance 33, March 1978, pp. 45-63.

33. These costs can destroy the value of a firm that would, had it adopted a more prudent capital management strategy, never have become insolvent in the first place. Moreover, the disastrous nature of the potential transaction costs associated with insolvency (and bankruptcy), can see a firm in moderate financial distress quickly spiral into insolvency. This is because debt investors may be unwilling to fund the firm (or only at penalty interest rates) for fear of subsequent exposure to these costs. In other words, if there is perceived to be the potential for insolvency, this can become a self-fulfilling prophecy.

34. It is for these reasons that transaction costs associated with insolvency/bankruptcy play a key role in the 'real world' analysis of optimal capital management plans. Any change to capital management strategy can materially influence the likelihood (or perceived likelihood) of insolvency/bankruptcy, and so the probability of these substantial costs being incurred. It is important to recognise that there does not need to be an imminent threat of insolvency or bankruptcy for these factors to have a material bearing upon a firm's optimal capital management strategy. What matters is the potential effect of a particular strategy on expectations.

35. If a less prudent capital management strategy raises the probability of future insolvency/bankruptcy – by any amount – this will reduce the expected (actuarially estimated) value of future cash-flows. This reduction will be equal to the change in probability of insolvency/bankruptcy multiplied by the expected additional transaction costs associated with mitigating those outcomes. Given the substantial magnitude of those costs, even small increases in the probability of those outcomes transpiring (e.g., from 0% to 5%) can have a significant effect on expected future cash-flows and, in turn, on the efficient debt management strategy.

36. Equally, if one aspect of a debt management strategy raises insolvency/bankruptcy risks another aspect of the debt management strategy might need to be made more conservative so that the net impact is reduced. For example, consider a firm exposed to high levels of refinancing risk due to heavy reliance on short term or lumpy debt maturity profile. This firm may seek to raise debt well in advance of that refinance being needed and to raise equity (including by, but not limited to, reducing dividends) in order to reduce firmwide gearing.

37. Such strategies may manage down the expected transaction costs of insolvency/bankruptcy but at the expense of higher other transaction costs (e.g., higher tax costs associated with lower gearing and line of credit fees/carrying costs associated with prefunding debt maturity).

2.3 Approach of credit rating agencies to refinance risk

38. The approach of credit agencies to the assessment of refinance risk has been summarised by Kanangra:[8]

> *Rating agencies do not stipulate the debt amount for the capital structure for an issuer. Neither do they counsel issuers on the most appropriate markets for raising debt, nor the term of the debt. However, rating agencies are looking for issuers to be conservative in their approach to the debt markets.*
>
> *Factors which the rating agencies seek in highly rated users are:*
>
> - ***A company with a spread of maturities to its debt, such that only a small proportion of its debt matures within each year**;*
>
> - *Refinance of maturing debt within 6-9 months of its maturity. **Early refinancing obviates the risk of the issuer not being able to refinance a tranche of debt if there is a market disturbance when the debt is maturing**; and*
>
> - ***Access to liquid funds**.*
>
> *Neither rating agency has published rules concerning debt maturity or refinance Neither are direct ratings drivers, but both contribute to a well-managed company and go towards stronger ratings.*
>
> *Liquidity is however a significant consideration for rating agencies. **The rating agencies take the approach that a company cannot be investment grade (IG) without adequate liquidity**. In order to be IG an issuer must not only satisfy the long-term metrics but must also have acceptable liquidity. **Both agencies measure liquidity by calculating the ratio of the assured cash sources over the next 12-24 months to the cash uses over the same time period**. In each rating opinion* [for a specific firm] *each agency has a section on liquidity, in which it describes the sources and uses of cash for the next 12-18 months.*

39. In short, having a large fraction of all debt refinanced in any given year would not provide "a spread of maturities to its debt, such that only a small proportion of its debt matures within each year" and would create a large cash requirement (including the cash necessary to repay all debts falling due) that would exceed the assured cash sources over the same period (at least for a regulated business with relatively stable cash flows).

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[8]   Kanangra, Credit Ratings for Regulated Energy Network Services Businesses, p. 26.

3 Question B: Efficient strategy given Aurizon's operating environment

Given you answer to question A, what is an efficient debt funding strategy for Aurizon's regulated rail access operations given its current operating environment including the current regulatory regime?

40. Based on my answer to question A, the efficient debt management strategy for Aurizon will be the debt management strategy that minimises regulatory mismatch risk subject to also minimising refinance risk.

41. Naturally, the debt management strategy that minimises regulatory mismatch risk for Aurizon depends on how the regulated cost of debt compensation for Aurizon is determined. I am instructed that the debt compensation for Aurizon is reset close to the beginning of each regulatory period based solely on prevailing debt market conditions at that time. I am instructed that this was the approach used to set debt compensation in the current period (FY18 to FY23) and it will be the implied approach used to set debt compensation for the cost of debt in the period (FY24 to FY27). This approach is generally described as an "on-the-day" approach – including by the QCA.[9]

42. In what follows I distinguish between the risk free "base rate" rate of interest and the "credit risk" component (debt risk premium or DRP). The risk-free base rate is the component that can be manipulated by the business using interest rate swaps (and/or issuing floating base rate bonds). The DRP is always fixed at the time a debt is issued.

43. The QCA's on-the-day approach is to set the cost of debt based on:

    a. a debt risk premium based on issuing a 10-year BBB+ debt; plus

    b. transaction costs associated with a strategy of converting the base rate of interest from 10-year to 4 years (where 4 years has in the past matched the term of regulatory period); plus

    c. the 4-year risk free rate; plus

44. The QCA describes this as compensating the following strategy.[10]

    This strategy assumes an efficient firm would:

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[9]   QCA, Trailing average cost of debt, April 2015, p.10.

[10]   Aurizon Network's 2017 draft access undertaking, December 2018, Appendix F: Assessment of individual WACC parameters, p. 138.

a. *issue debt with a 10-year term to maturity to reduce refinancing risk and incur transaction costs associated with issuing this debt*

b. *use interest rate swap contracts to convert the base interest rate element of its cost of debt from the raw term to a term that matches the length of the regulatory period (4 years), and incur the associated transaction costs*

c. *use credit default swap (CDS) contracts to convert the 10-year debt risk premium embedded in the average term of debt into a four-year debt risk premium.*

45. However, as the QCA acknowledges, there is no liquid CDS market and a strategy of refinancing all debt at the beginning of every 4-year regulatory period with 10-year debt is simply unworkable. If a firm attempted to refinance all debt at the beginning of each 4-year regulatory period they would need to issue 4-year debt. Moreover, even such a strategy (refinancing all debt at the same time) would expose the business to untenable levels of refinance risk (and would mean an investment grade credit rating was unlikely to be attainable even with only modest debt gearing).

46. In this context, the most efficient debt management strategy is one that simultaneously:

   a. Manages refinance risk by issuing long term debt such that a staggered maturity profile exists with only relatively small amounts of total debt falling due in any given year (e.g., 10% of debt falling due each 12 months on average associated with a 10-year debt issuance strategy);

   b. Manages regulatory mismatch risk by using swap transactions to reset the base rate of interest at the same time that the regulator sets the cost of debt allowance.

47. The QCA has previously described this as the most efficient way for a regulated business to manage both refinance and regulatory mismatch risk under the on-the-day regime.[11]

   The on-the-day approach determines an allowed return on debt for the regulated firm as the sum of a prevailing risk-free rate and a prevailing DRP. As a result, both parameters are estimated over a short period (i.e., typically 20–40 days) closely preceding the start of the regulatory cycle to reflect current (i.e., on-the-day) rates.

   ...

   Firms will have the incentive to match this benchmark, subject to managing various risks. As discussed in section 3.1.3, firms tend to manage refinancing risk by taking out long-term debt and by staggering that debt.

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[11] QCA, Final decision, Trailing average cost of debt April 2015

The QCA's approach recognises the potential for refinancing risk and determines an efficient (i.e., benchmark) term of debt (QCA, 2014i: 217–218). To date, this term has been estimated at about 10-years (PwC, 2013: 19–20).

Given the use of long-term debt, an efficient firm would have the incentive to align its debt with the regulatory reset, consistent with the matching policy. The regulated firm can employ both interest rate swaps and credit default swap (CDS) contracts to achieve this objective. In summary, the implied debt management strategy involves the regulated firm (e.g., for a five-year reset):

(a) issuing an efficient term of debt (e.g., 10-years) to manage refinancing risk (with respect to frequency), where the rate is set over a short period (e.g., 20 days) immediately prior to the start of the regulatory cycle

(b) using interest rate swap contracts to manage interest rate risk by converting the base rate of the 10-year cost of debt such that the term matches that of the regulatory cycle (e.g., five years) using CDS contracts to convert the 10-year DRP embedded in the average term of debt into a five-year DRP.[24]

However, in practice, it is difficult to hedge the DRP using CDS contracts due to the lack of market liquidity in these instruments (PwC, 2013: 8). The QCA's approach recognises that the market for CDS contracts is illiquid, and accordingly assumes that firms do not use CDS contracts at this time. Therefore, the approach allows a 10-year DRP rather than a five-year DRP (QCA, 2014d: 3–6; Lally, 2010a: 11).

In practice, the mismatch between the benchmark DRP and the firm's DRP is managed in various ways, including by selecting the timing and market of debt issues.

48. In this passage the QCA arrives at the same conclusion as a number of other regulators (the AER, the Western Australian Economic Regulatory Authority (ERA) and the New Zealand Commerce Commission (NZCC)). Specifically, that the most efficient debt management strategy for a firm subject to the on-the-day regulatory regime is to issue long term staggered debt but to overlay this with an interest rate swap portfolio such that the base rate of interest can be reset at the same time the regulator sets the on-the-day cost of debt.

49. I note that of these three regulators:

   ▪ The ERA and the NZCC have reformed their former 'on-the-day' regime to directly model a staggered debt portfolio with an interest rate swap overlay. I shall follow common usage to describe this as a 'hybrid' cost of debt

allowance/debt management strategy. The term hybrid conveys that the cost of debt (benchmark and actual) is the sum of:

i. an on-the-day base (risk free) rate of interest; plus

ii. a trailing average of debt risk premiums (DRP).

▪ The AER determined that it would move from an 'on-the-day' regulatory benchmark to a 'trailing average' benchmark. However, in recognition that the hybrid debt management strategy was the efficient strategy under the on-the-day regime the AER defined a transition from the on-the-day regime to the trailing average regime that would allow regulated businesses to manage regulatory mismatch risk during that transition.
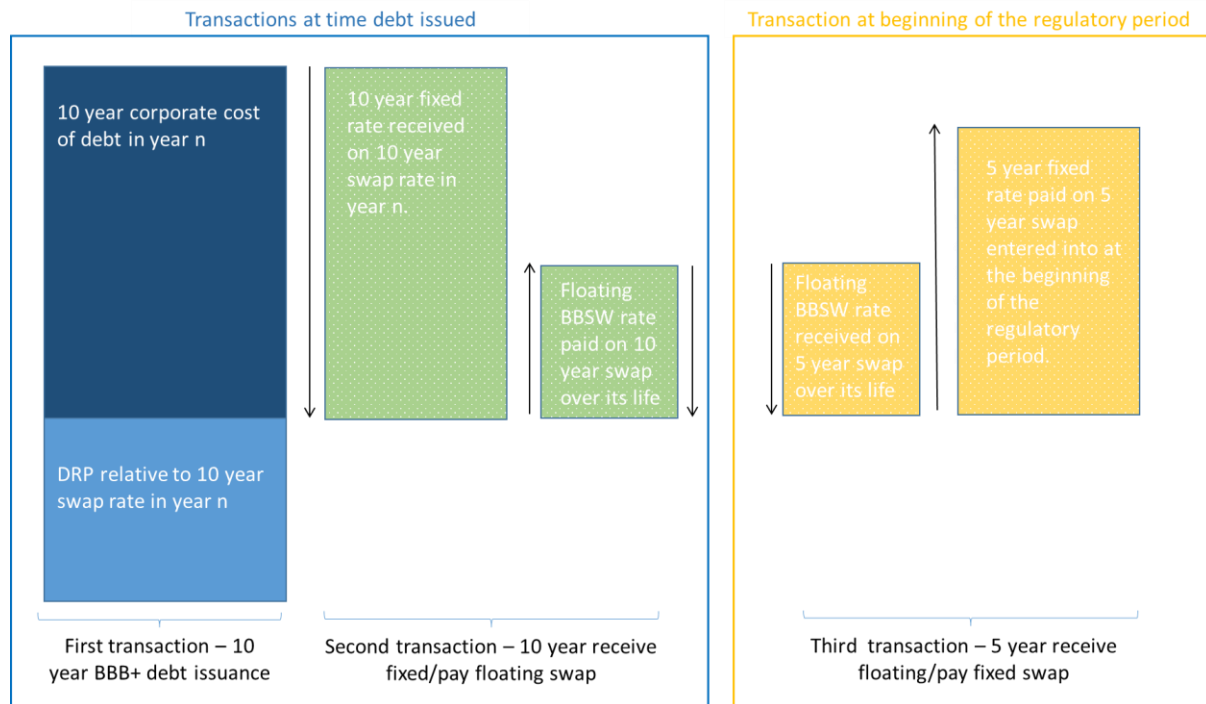
3.1 Mechanics of the hybrid cost of debt strategy

50. It is useful to describe in more detail the mechanics of the swap strategy underpinning the hybrid approach. In what follows I will assume that the regulated business maintains a portfolio of 10-year evenly staggered debts. However, the business makes use of floating rate debts and/or interest rate swap contracts to hedge its base rate of interest to the on-the-day regulatory allowance for the cost of debt.

51. I will also assume that the length of the regulatory period is 5-years (consistent with common practice amongst Australian regulators). I note that Aurizon has typically been subject to 4-year regulatory periods, but I also note that this may not be the case in the future.

52. Under the hybrid approach the business will:

▪ Always issue floating rate 10-year bonds. Having done so, the business will have an underlying base rate exposure on the entire portfolio that is 100% floating at the 3-month bank bill swap rate.

▪ Periodically, at the beginning of each new regulatory period, fix its underling 100% floating base interest rate exposure for the length of the regulatory period by entering into a pay fixed/receive floating interest rate swap for 100% of its debt portfolio.

53. A 10-year floating rate bond will promise to pay the lender the 3-month bank bill swap rate (which resets at prevailing rates every 3-months) plus a fixed debt risk premium (DRP) which is constant over the full 10-years of the bond's life. A functionally equivalent effect can be derived by issuing a 10-year fixed rate bond

and contemporaneously entering into a receive fixed/pay floating 10-year interest rate swap.[12]

54. It is necessary that 100% of the base rate of interest will be floating rate exposure at the beginning of each regulatory period because that is when the floating rate exposure can be hedged to the regulatory allowance using a pay fixed interest rate swap (as per 0.□ above).

55. It is important to note that this strategy, once entered into, cannot be instantaneously unwound. Specifically, having followed this debt management strategy to manage regulatory mismatch risk in regulatory period "T" the business will have a cost of debt on its entire portfolio at the beginning of regulatory period "T+1" that is equal to:

- The 3-month bank bill swap rate; plus
- A 10-year trailing average of debt risk premiums

56. The mechanics of this strategy is described in Figure 1 below. In this figure it is assumed that the borrower issues a fixed rate bond and enters a contemporaneous receive fixed/pay floating interest rate swap.

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[12] In this case, the receive fixed swap rate effectively 'cancels out' the same quantum of the fixed rate bond – leaving the borrower with a net exposure of the fixed rate on the bond in excess of the 10-year swap rate (the DRP) plus the pay floating exposure on the interest rate swap.

Figure 1: Mechanics of swap strategy underpinning hybrid

Transactions at time debt issued

Transaction at beginning of the regulatory period

10 year corporate cost of debt in year n

10 year fixed rate received on 10 year swap rate in year n.

Floating BBSW rate paid on 10 year swap over its life

5 year fixed rate paid on 5 year swap entered into at the beginning of the regulatory period.

Floating BBSW rate received on 5 year swap over its life

DRP relative to 10 year swap rate in year n

First transaction – 10 year BBB+ debt issuance

Second transaction – 10 year receive fixed/pay floating swap

Third transaction – 5 year receive floating/pay fixed swap

57. Moving from left to right in the above graphic describes the mechanics of the swap strategy underpinning the hybrid debt management strategy as it relates to the costs associated with a single bond issued in year "n".

   a. First, the firm issues a 10-year fixed rate bond with a yield that is represented by the height of the first column (the sum of both the light and dark blue components of that column).

   b. Second, the firm immediately enters into a 10-year swap contract (the components of which are the green coloured columns in the above figure) under which it:

      i. is paid the 10-year fixed swap rate prevailing at that time (the business receives this same (fixed) rate over the 10-year life of the swap contract – which is also the life of the bond). The difference between the 10-year fixed swap rate and the yield on the corporate bond is, for future reference, how the light blue "DRP relative to 10-year swap rate in year n" is calculated;

      ii. must pay its counterparty the floating 3-month bank bill swap rate (BBSW) over the next 10-years. This is described as a 'floating rate' because the BBSW rate varies through time and the firm must make quarterly payments to the counterparty at a rate equal to whatever the prevailing 3-month BBSW rate is at that time.

c. (Note that if the business issued a 10-year floating rate bond instead of a fixed rate bond the combined cost would be the same. Namely the light blue DRP plus the green BBSW rate. Rather than cancelling out, the larger dark blue and green restables would simply not exist.)

d. Third, at the beginning of the next regulatory period, the firm enters into a 5-year swap contract (the two components of which are coloured yellow in the above figure) under which it:

   i. must pay the 5-year fixed swap rate prevailing at that time (the business receives this same (fixed) rate over the 5-year life of the swap contract – which is also the life of the regulatory period);

   ii. is paid by its counterparty the floating 3-month bank bill swap rate (BBSW) over the next 5-years.

58. It is useful to make the following observations about the above mechanics.

   a. The middle two green and yellow floating BBSW rate amounts 'cancel out' so these have no net effect on the costs of the strategy.

   b. The DRP on the bond at the time of issuance (measured relative to 10-year swap rates) is not altered and is payable every year over the life of the bond.

   c. The third step is undertaken to hedge not just already existing bond/swap combinations created in steps 1 and 2 but also to hedge bond/swap combinations expected to be created over the course of the regulatory period. Consider a 10-year bond issued at the end of the third year of a regulatory period - with the proceeds used to refinance a bond of equivalent value that is maturing at that time. At the beginning of the regulatory period the business will have entered into a 5-year (pay fixed/receive floating) swap that hedged:

   i. the 3 years of floating rate exposure on the old (already existing) bond/swap combination maturing at the end of year 3; and

   ii. the 2 years of floating rate exposure on the new bond/swap combination that will be issued/entered into at the end of year 3.

   d. At any point in time, the impact of all of these steps may be to raise or lower the total cost of debt relative to a simple trailing average with no swap contract overlay. It will depend on the shape of swap yield curves, the movements in swap rates between bond issue date and the beginning of the regulatory period and also the level of transaction costs associated with the swaps. However, on average, it can be expected that this method will lower debt costs relative to a trailing average because the base rate of interest is set at 5-years rather than 10-years (and 5-year rates are typically lower than 10-year rates) and this is typically more than any swap transaction costs.

59. Figure 1 includes a number of elements that 'cancel out' across the entire strategy. In particular, the two floating rate payments underpinning each swap cancel out. In

addition, the 10-year fixed swap rate received over the life of the bond effectively cancels out an equal amount of the 10-year yield on the bond. Figure 2 below shows a simplified version of Figure 1 with the elements that cancel out excluded.

Figure 2: Simplified mechanics of swap strategy underpinning hybrid
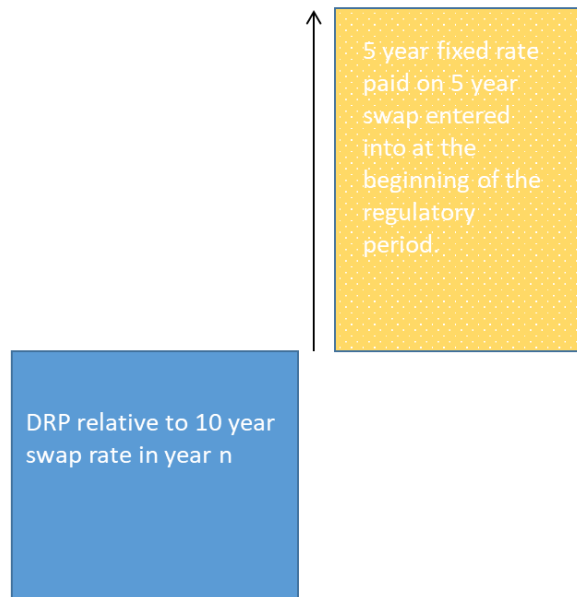
60. Figure 1 and Figure 2 depict the impact of the swap strategy on a single bond. However, the impact of the swap strategy applied to each bond in the staggered debt portfolio is simply the sum of these. This is illustrated in Figure 3 below. The difference between Figure 2 and Figure 3 is simply that a trailing average DRP replaces the DRP on the single bond in Figure 2.

Figure 3: Aggregate cost of debt under the hybrid approach
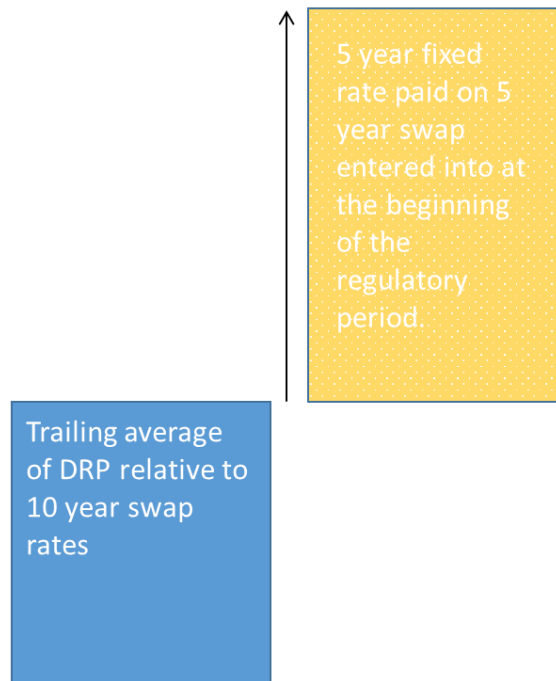
61.   In order to be an effective way of hedging to the regulatory allowance, the pay fixed rate swap contracts must be undertaken in the same period that the regulator uses to set the cost of debt allowance and must only last for as long as that cost of debt allowance will be paid.[13] Only then will the business's interest rate exposure be purely floating at the beginning of the next regulatory period – enabling it to once more enter into 5-year fixed swaps to turn that floating rate exposure into a fixed rate exposure in the same market conditions that the regulator uses to determine the fixed cost of debt.

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[13]   in past QCA practice for Aurizon this has been a 4-year regulatory period but, as noted above, I have provided my illustration with the generic 5-year regulatory period widely used by the QCA and other regulators in other industries.

4 Question C: Risks from adoption of a trailing average without transition

Given your answer to question B, what risks and costs would be created for Aurizon if the QCA implemented compensation for the cost of debt based on a trailing average from FY28 onwards without any transition?

62. A regulated business that has designed their debt and interest rate swap portfolio to efficiently match the on-the-day regulatory allowance in one regulatory period will be unable to immediately match a trailing average regulatory allowance in the next regulatory period. This is true even if the regulated business has been given advanced warning of the proposed change in the regulatory regime.

63. This conclusion follows from the mechanics of the hybrid debt management strategy as set out in the previous section. Assume the that regulated business issues 10-year debt and that the regulator plans to move from an on-the-day regime in regulatory period "T" to a 10-year trailing average with no transition in regulatory period "T+1". It follows that:

    a. The regulatory regime in regulatory period "T" is the on-the-day regime;

    b. If, in regulatory period "T+1", the regulator immediately adopts a trailing average then compensation for the cost of debt will be equal to:

        i. A base rate of interest that is a 10-year trailing average of 10-year swap rates; plus

        ii. A trailing average DRP relative to the 10-year swap rate.

    c. However, in order to efficiently manage regulatory mismatch risk in period "T" the regulated business must adopt the hybrid debt management. If so, the regulated business must start regulatory period "T+1" with:

        i. A base rate of interest that is 100% the prevailing floating rate (i.e., the 3-month bank bill swap rate); plus

        ii. A trailing average DRP relative to the 10-year swap rate.

64. If the regulated business left their base rate floating (i.e., did not enter any fixed rate swap contracts) then they would:

    a. have effectively hedged their DRP costs to the regulatory allowance (i.e., cii equals bii); but

    b. have a potentially large mismatch between their base rate of interest and the regulatory allowance (equal to ci less bi).

65. Of course, it would be imprudent to leave the base rate floating because this would create ongoing regulatory mismatch risk. For example, a 1.0% change in the 3-

month bank bill swap rate would immediately flow through to a 1.0 higher interest costs on the entirety of the businesses debt portfolio even though the higher BBSW rate may have no or little effect on the regulatory benchmark (a 10-year trailing average of 10-year rates).

66.   The prudent response from a regulated business would be to transition to a fixed rate trailing average in the quickest way possible. This is set out in detail in section 5.3 "A replicable and efficient transition to a trailing average". However, for the purpose of my answer to this question I simply rely on the fact that the regulated business transitioning from a hybrid to a trailing average strategy will begin the transition with a cost of debt approximated by:

- The prevailing 5-year swap rate at that date; plus

- A 10-year trailing average of DRPs to 10-year swap rates.

67.   The latter will be matched to a trailing average allowance with no transition, but the former will not. For the former, there will be a mismatch to the extent that the prevailing 5-year swap rate is different to the 10-year historical average of 10-year swap rates.

68.   In order to illustrate the potential magnitude of this mismatch I have used risk free rate data published by the RBA since June 1969.[14] I have then compared the 10-year trailing average of 10-year risk free rates against the prevailing 5-year risk free rate (noting that the regulated business transitioning from a 100% floating rate exposure to a 10-year trailing average will enter into 1 to 10-year swaps with an average maturity of around 5-years).

69.   The difference between these two series is an estimate of the size of the regulatory mismatch that would have existed at that date if the regulator moved (without any transition) from an on-the-day regime to a 10-year trailing average regime. This difference is captured by the blue time series in Figure 4 below.

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[14]   I use yields on Government bonds because these are available for a longer time period in Australia than interest rate swap yields. This is a good approximation to the same analysis being performed with interest rate swaps had interest rate swaps been in existence for this period. This is because interest rate swaps are a reasonably small and constant margin on government bond yields.

Figure 4: Regulatory mismatch created by moving from an "on-the-day" to "trailing average" regime without transition*
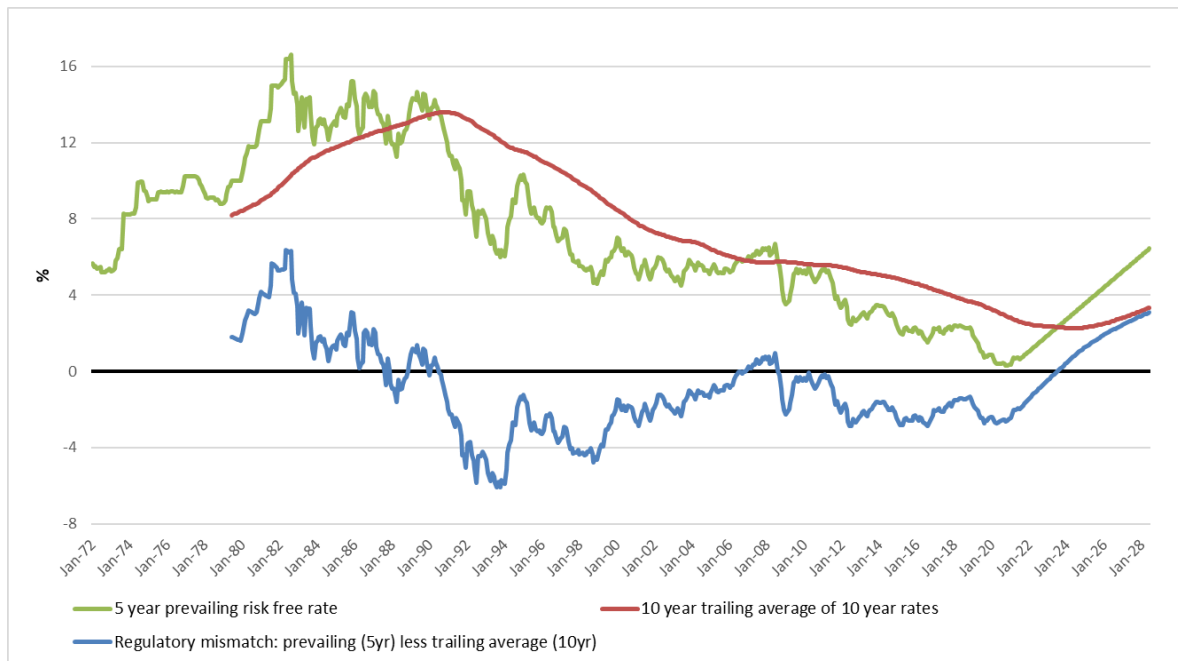
*Based on historical interest rate data from 1969 onwards as published by the RBA in publication "F2 Capital Market Yields - Government Bonds"

70. Based on historical patterns of interest rates, the regulatory mismatch has been as high as positive 6% (i.e., costs 600bp higher than regulatory compensation) and as low as minus 6% (i.e., costs 600bp below the regulatory benchmark).

71. The regulatory mismatch is most positive when prevailing interest rates are higher than they were, on average, in the previous 10-years (as was the case in the early 1980s). Similarly, the regulatory mismatch is most negative when prevailing interest rates are lower than they were, on average, in the previous 10-years.

72. Over the last 30 years, the regulatory mismatch has been typically negative because interest rates have been falling on average over that period – such that the prevailing 5-year interest rate is lower than the average of 10-year interest rates over the previous 10-years. The one exception to that is the first half of 2008 when prevailing 5-year interest rates were slightly higher than the average of 10-year rates over the previous 10-years.

73. The last observation in this chart for July 2021 shows that if a regulatory period ended in July 2021 and the regulator moved immediately from an on-the-day to a trailing average regime (with no transition) the regulatory mismatch would be -2.0%. That is, the regulated business would have base interest costs (based on an average of 1 to 10-year fixed rate swaps taken out in July 2021) that were 2.0% lower than the base rate in the regulatory allowance (based on a 10-year trailing average of base rates).

74. In other words, moving straight to a trailing average without a transition in June 2021 would overcompensate a regulated business by around 2.0% in the first year (falling to 0% by 2031 when costs and compensation will be aligned).

75. In this sense, if implemented right now, the QCA policy of no transition would not impose regulatory mismatch risk on Aurizon. It would, if anything, provide a windfall to Aurizon relative to its efficient costs.

76. However, this policy change will not be implemented today for Aurizon. Rather, it will be implemented in 2028 and much can change in financial markets over that time period. The QCA policy of no transition may be relatively low risk for businesses whose next regulatory reset is soon. However, it is not low risk for Aurizon given the length of time until that next regulatory reset.

77. Aurizon will continue to be subject to compensation based on the on-the-day regime up to June 2028. To the extent that interest rates rose between now and June 2028 then Aurizon could face material under compensation relative to its costs if a trailing average is immediately implemented by the QCA and imposed on Aurizon at the next regulatory reset. Figure 5 below illustrates the under-compensation that Aurizon will suffer in the year beginning July 2028 if interest rates (both 5 and 10-year) gradually but steadily returned to the pre global financial crisis (pre 2008/09) levels.

Figure 5: Regulatory mismatch created by moving from an "on-the-day" to "trailing average" regime without transition*

*Based on historical interest rate data from 1969 onwards as published by the RBA in publication "F2 Capital Market Yields - Government Bonds" plus an assumption that interest rates steadily rise to pre 2008/09 levels between June 2021 and June 2028.

78.   In the scenario described in Figure 5 Aurizon would be forced to pay interest rates of around 6.4% based on prevailing interest rates in 2028 (the last observation on the green line). However, compensation would only be around 3.3% based on 10-year trailing average of 10-year interest rates (the last observational the red line). This leads to regulatory mismatch of 3.1% (the last observation on the blue line) such that Aurizon would have base rate debt costs roughly double its compensation for those costs.

79.   Of course, this is just one of many possible scenarios and is, by no means, the most extreme. A worse scenario, from an Aurizon risk management perspective, would be if interest rates continued to decline for a period but then rose more sharply in the years immediately prior to June 2028. Figure 6 illustrates such a scenario under which Aurizon would have a regulatory mismatch of 4.3%.

Figure 6: Regulatory mismatch scenario: falling rates from June 2021 to June 2025 followed by rapidly rising interest rates to June 2028*
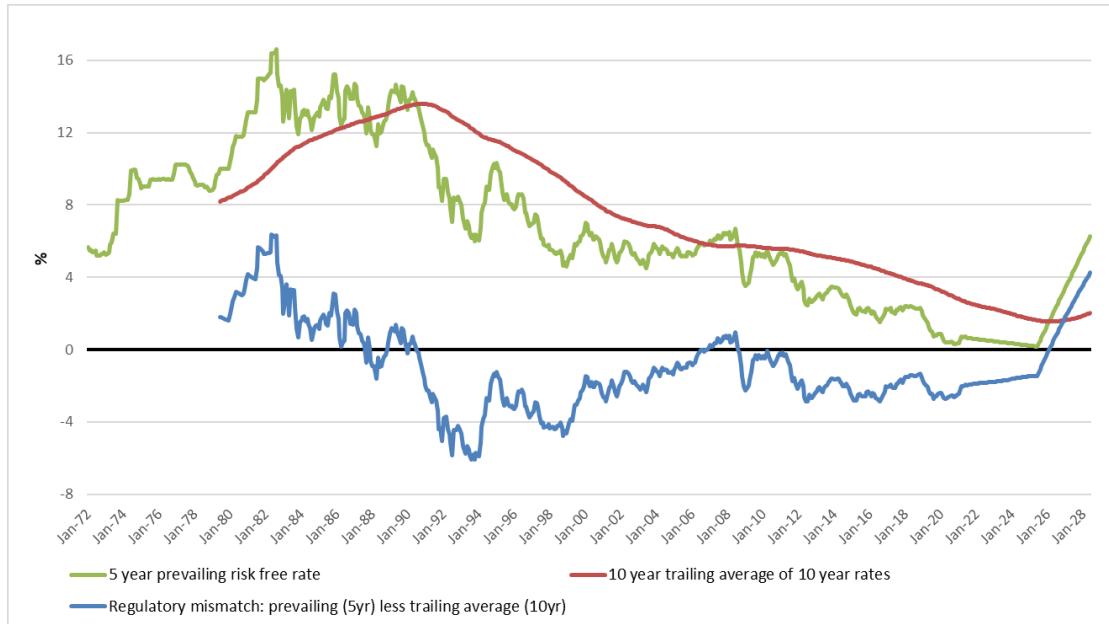
*Based on historical interest rate data from 1969 onwards as published by the RBA in publication "F2 Capital Market Yields - Government Bonds" plus an assumption that interest rates fall steadily from June 2021 to June 2025 and then rise rapidly to pre 2008/09 levels by June 2028.

80. The outcome described in Figure 6, or scenarios similar to it, is not an outcome that is likely to occur. This is true in the sense that it is not currently predicted to occur by financial market analysts, and it represents a steep increase in interest rates that we only see infrequently in the historical record.

81. That said, we do see very significant rises and falls in interest rates in the historical record. For example, there was an almost 4% rise from January 1994 to May 1995 and a 4% decline from July 2008 to July 2012. Aurizon would be "unlucky" to be on the wrong end of such an interest rate change, but it would not be impossible for this to occur.

82. This brings me back to my answer to Question A. The role of an efficient and prudent debt management strategy is to guard against the potential damage from being "unlucky". If it was the case that the scenario's modelled in Figure 5 and Figure 6 came to fruition it appears likely to me that a generic business in Aurizon's operating environment might very well become insolvent/bankrupt.

83. That is, having a forecast deficit of 4% on a debt portfolio that is 55% of the value of assets could easily create circumstances where debt investors decline to refinance the regulated business's debt (or only to do so at penalty DRPs which would themselves by uncompensated and feed into further insolvency risk). This is especially if other negative shocks were to hit that regulated business (such as the financial failure of major customer etc). That is, the regulatory mismatch could cause the regulated firm to fail.

84. Even if insolvency did not occur, the mere threat of insolvency would cause the regulated business to incur many of the costs associated with financial distress described in my answer to Question A and Appendix A. These costs can be extremely high even if insolvency is avoided.

85. I note that these risks are particularly high for Aurizon given that the trailing average would only be applied to Aurizon in 2028. As seen from the above charts, immediate adoption of the trailing average today would overcompensate for efficient costs incurred under the hybrid model (the blue line is currently below zero in the above charts). For regulated businesses where the trailing average would be implemented in the next few years one could take the view that there is a small probability of this being reversed before that time (such that regulatory mismatch risk could give rise to insolvency risk). However, for Aurizon the relevant date is ~7 years in the future, and it is highly uncertain what prevailing market conditions will exist at that time.

86. A prudent and efficiently run business would take steps to minimise not just the risk of insolvency but the risk of the risk of insolvency. The first step would be to submit that the regulator set regulatory compensation for the cost of debt post 2028 that is replicable for an efficiently managed regulated business given its operating environment pre-2028. I expand on this in my answer to Question D below.

87. However, if the regulator nonetheless imposed a trailing average without transition the regulated business would need to take steps to minimise the potential regulatory mismatch risk that this created post 2028. There are two options available to the business that would do this – both of which would involve significant costs.

    a. First, the business could radically reduce its own debt funding. For example, instead of funding itself with 55% debt the business could reduce that funding level to below 25%. This is not a simple process and would have the following costs:

        i. Equity raising costs associated with raising the equity to fund lower gearing levels;

        ii. Increases in tax costs as the tax shield of debt is lost (see Appendix A);

        iii. Disruptions to relationships with debt lenders which would need to be rebuilt if debt levels were returned to optimal levels once the period of regulatory mismatch was past (around 2029)[15]

    b. Second, the regulated business could seek to arrange bespoke derivative contracts (with financial institutions with sufficiently strong balance sheets)

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[15] In reality this mismatch period would extend out beyond that date as it is likely that the process of delveraging over 2022 to 2028 would also create a non-uniform trailing average internal cost of debt for the regulated business (with less than the assumed 10% per annum debt raised in the period 2022 to 2028 and more debt raised pre and post this period)

where those contracts would 'pay out' in circumstances where regulatory mismatch would be highest (prevailing interest rates above the 10-year trailing average). However, such a contract would need to be on a face value equal to the debt proportion of the RAB. It is hard to know whether there would be any willing counterparty for such a contract. However, it can reliably be estimated that, if a counterparty could be found, the cost of arranging such a contract (including the price paid above the actuarially expected cost) would be very high.

88. To the extent that the QCA does not implement one of the regulatory approaches I set out in my answer to Question D, I consider that it should include costs associated with the strategies set out above in its modelling of regulated building block costs.

5 Question D: How can the QCA eliminate regulatory mismatch risk?

How could the QCA amend its draft report approach for Aurizon to reduce or eliminate the risks and costs identified in your answer to question C? In answering this question, please have regard to:

a. *The Western Australian Economic Regulation Authority's approach to implementing a hybrid of the trailing average and on-the-day approaches to compensating for the cost of debt;*
b. *The AER's approach to transitioning from the on-the-day approach to a 10-year trailing average; and*
c. *Any other concepts or regulatory precedent you consider relevant.*

89. For Aurizon to efficiently manage regulatory mismatch risk the QCA would need to either:

   a. Apply a transition from the on-the-day approach to the 10-year trailing average approach and, for the reasons explained in my answer to Question E, apply capex-based weights to that trailing average; or

   b. Adopt the hybrid strategy as the new regulatory benchmark without any transition. In this case a transition is unnecessary because the QCA would be adopting a regulatory benchmark that matches the current efficient debt management strategy given the current on-the-day regime. Moreover, capex-based weights are less necessary because the on-the-day base rate is continually being reset at prevailing rates in a manner that is able to be hedged.

90. Both approaches would provide the regulated business with the ability to minimise regulatory mismatch risk. This is because both strategies involve the adoption of regulatory benchmark that is immediately replicable by a regulated business that has been efficiently managing regulatory mismatch risk under the QCA's on-the-day regime.

5.1 Three general principles for regulatory compensation for the cost of debt

91. More generally, I consider that the QCA should be guided by the following three principles when defining any regulatory compensation for the cost of debt including both: a long-term regulatory benchmark and any transition from one regulatory benchmark to the next.

a. The QCA should define a benchmark efficient debt financing strategy that is capable of being replicated by an efficient business managing its debt portfolio prudently;

b. If the QCA benchmark efficient debt financing strategy changes from one prudent strategy to another prudent strategy, the QCA should define a replicable transition strategy that a business could implement to in order to minimise regulatory mismatch risk during that transition.

c. The QCA should estimate and compensate for the costs of efficiently implementing the benchmark strategy and any transition between benchmark strategies.

92. By way of specific examples in relation to each point listed above:

a. A benchmark is replicable if a firm can implement a debt management strategy to closely align with the benchmark. A benchmark is both efficient and replicable if following that benchmark results in an appropriate trade-off between managing refinance risk and expected interest rate costs. For example, a benchmark of only issuing 1 year debt (or, at the other extreme, 40-year debt) might be technically replicable but would not strike an efficient balance between interest costs and refinance risk.

b. Consider the move from a 10 to a 5-year trailing average benchmark. A replicable transition path between the two replicable benchmarks would be to assume that, over a 10-year transition, the business replaces staggered maturity 10-year debt with 5-year debt as the former matures. Under this transition the trailing average would be a mix of 10 and 5-year debt costs (more heavily weighting the latter as the transition progresses).

c. Having defined the benchmark and/or transition to the benchmark the cost of implementing that approach should be estimated as closely as possible. For example, in the case of a transition from a 10-year to a 5-year trailing average, this would involve estimating the cost of 10 and 5-year debt at predetermined averaging periods and giving this debt the relevant weight in the trailing average.

5.2   The hybrid approach is immediately replicable and efficient

93. Under the hybrid debt management strategy (assuming 10-year debt issuance and a 5-year regulatory period) the cost of debt would be given by:

a. The 5-year swap rate in an averaging period close to the beginning of the regulatory period;

b. The trailing average of 10-year debt risk premiums (measured relative to the 10-year swap rate); plus

c. Portfolio transaction costs.

94. My answers to questions A and B establish that the hybrid debt management strategy is the efficient response to the QCA's application to Aurizon of the on-the-day compensation regime for the cost of debt.

95. It is, therefore, open to the QCA to adopt the hybrid debt management strategy as the regulatory benchmark without any transition. This would be an improvement on the on-the-day regime because it would be more closely replicable by the regulated business. Applying the principles set out in section 5.1:

a. The hybrid debt management strategy is replicable and is based on the observed practice of regulated businesses subject to on-the-day regulation. The hybrid debt management strategy allows the regulated business to manage refinance risk by maintaining a staggered debt portfolio of long-term debt issuance. It also achieves a lower cost of debt on average than the on-the-day or the trailing average approach by virtue of only compensating for a 5-year base rate instead of a 10-year base rate.[16]

b. Adopting the hybrid strategy as the regulatory benchmark would be a change in the regulatory benchmark from the on-the-day approach. However, this change in the regulatory benchmark would be to better match the existing efficient debt management strategy under the on-the-day regime. Therefore, no transition would be required.

c. Under the hybrid method the cost of debt would be estimated as set out in paragraph 93 above.

96. The lower expected compensation under the hybrid debt benchmark can be illustrated by comparing a long time series of the difference between 5 and 10-year risk free rates. Under all three regulatory benchmarks considered (hybrid, trailing average and on-the-day) the assumption is that 10-year debt is issued. Consequently, all three benchmarks will, in expectation, have the same average DRP (being the DRP on 10-year debt). However, under the on-the-day and the trailing average approach the base rate of interest will also be the 10-year base rate. This differs to the hybrid where the base rate of interest is the 5-year base rate (floating rates swapped into 5-year fixed rates).

97. Figure 7 provides a time series of the 10-year risk-free rate less the 5-year risk free rate from 1972 onwards (the longest period over which the RBA publishes 5-year rates). As discussed previously, this is a longer time series than is available for swap

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16   The yield curve is typically upward sloping such that the 10-year yield is higher than the 5-year yield.

rates but the difference between 5 and 10 government bond rates will closely approximate the difference between 5 and 10-year swap rates.[17]

Figure 7: 5-year rates are typically lower than 10-year rates
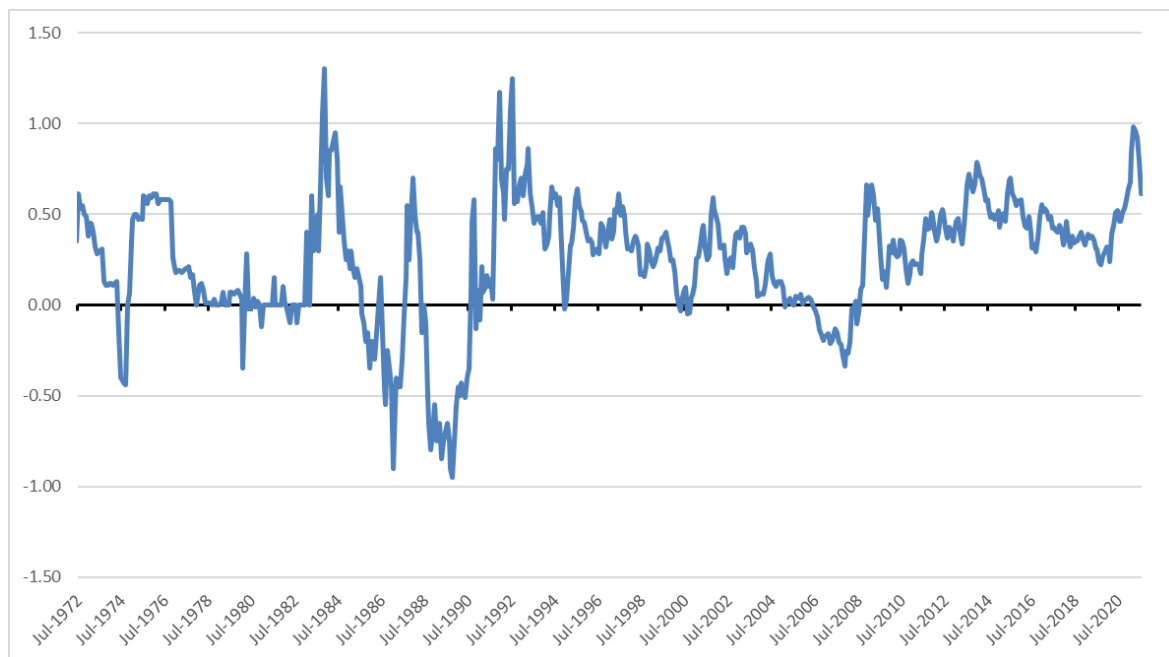
Based on historical interest rate data from 1969 onwards as published by the RBA in publication "F2 Capital Market Yields - Government Bonds".

98. Based on the historical average relationship, the hybrid debt management strategy would result in a lower cost of debt by around 25 bppa. Since January 1995 this difference has been 32 bppa. Arguably, the latter period is more relevant to future market conditions as this covers the period of explicit inflation targeting by the RBA. (I note that if the QCA continued to maintain a 4-year regulatory period then the difference to the 10-year base rate would be even larger.)

99. My answers to questions E and F will also describe other material implementation advantages of the hybrid methodology. Specifically, this method avoids the need to weight periods in the trailing average based on RAB growth in the relevant year. This substantially improves:

   a. The simplicity of implementation relative to a weighted trailing average; and

   b. The replicability (exposure to regulatory mismatch risk) relative to an unweighted trailing average cost of debt.

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[17]   This is because, on any given day, the spread between 5-year swap and 5-year government bond rates will be similar to the spread between 10-year swap and 5-year government bond rates (and any difference will also be relatively stable overtime).

5.2.1   Regulatory precedent for adoption of the hybrid approach

100. The Western Australian Economic Regulation Authority (WA ERA) and the New Zealand Commerce Commission (NZCC) have both adopted the hybrid strategy as the regulatory benchmark for estimating the cost of debt. The WA ERA first adopted this approach in 2015 decision for ATCO gas where it concluded.[18]

> *the hybrid trailing average approaches clearly perform better in terms of 'minimising differences' and the present value condition. The simple hybrid trailing average approach also performs best with regard to regulatory costs.*

101. The NZCC also adopted the hybrid benchmark on the same grounds.[19]

> *Our view is the interest rate associated with the majority of a firm's issued debt can be hedged using the swap market and we provide a reasonable allowance for the cost of that hedging. The evidence continues to suggest to us that the use of the prevailing rate provides better incentives for efficient investment, and the existence of the interest rate swap market means there is a low likelihood of a significant mismatch between the allowed risk-free rate provided for in the WACC and the interest costs paid by suppliers.*
>
> *…*
>
> *We previously considered that the potential for material mismatches (in regard to the debt premium) was minimal due to the relatively stability of the debt premium (particularly compared to the risk-free rate). However, we have now been persuaded that there is a benefit in moving to a historical averaging approach.*
>
> *…*
>
> *Given the above, we have changed our approach to estimating the debt premium compared to the draft decision. We now consider that, on balance it is more appropriate to provide a historical average of the debt premium, rather than retaining the prevailing approach proposed in the draft decision.*

102. Both the WA ERA and the NZCC cite the superior investment incentive properties of the hybrid approach as a reason to prefer it to the trailing average cost of debt. I discuss this further in my answers to questions E and F below.

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[18]   ERA, Final Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution Systems, pp.86-87.

[19]   NZCC, Input methodologies review decisions, Topic paper 4: Cost of capital issues, 20 December 2016, pp. 27, 35, 38

5.3 A replicable and efficient transition to a trailing average

103. The hybrid debt management strategy is the efficient response to the on-the-day regime. This strategy, once entered, cannot be instantaneously unwound. For an efficient business to move from the hybrid to a trailing average debt management strategy it would need to undertake a specific set of steps.

104. If a business has been employing the hybrid debt management strategy in the past, then the fixed rate swaps that it entered in to in the previous access arrangement period will expire at the end of that period leaving the business with a fully floating base rate exposure. The relevant transition must therefore reflect how a benchmark efficient entity with base interest costs that are completely floating at the beginning of the regulatory period would transition to a trailing average exposure. The simplest way to do so would be to set an allowance based on an assumed strategy of entering into 10 different fixed rate swap contracts:

   ▪ 10% of the overall portfolio value fixed at one-year maturity;

   ▪ 10% fixed at two-year maturity;

   ▪ and 10% of the portfolio fixed at each of 3 to 9 years maturity; 10% at 10-year maturity (or equivalently, just issue 10-year fixed rate debt (which has embedded in it the 10-year swap rate)).

105. Entering into these swap contracts, one for each year maturity, results in the maturity profile of the entity's swap exposure being aligned with the maturity profile of the entity's DRP exposure, given the assumption that the business has followed the hybrid debt management strategy in the past.

106. Having done this the firm would have effectively created a synthetic trailing average cost of debt that is equal to the average of:

   ▪ The DRP on 10-year debt (measured relative to 10-year swap rates) from 9 years ago plus the one-year swap rate today.

   ▪ The DRP on 10-year debt from 8 years ago plus the 2-year swap rate today;

   ▪ The DRPP on 10-year debt from 7 (6, 5, 4, 3, 2) years ago plus the 2 (3, 4, 5, 6, 7, 8) year swap rate today;

   ▪ The DRP on 10-year debt from the most recent year (year "zero") plus the 10-year swap rate today (or, equivalently, the 10-year fixed rate today).

107. This portfolio approach could then be rolled forward in precisely the same way that a trailing average return on debt would – dropping the debt instruments from the earliest year of the trailing average because those debt instruments are maturing soonest and replacing the earlier debt with the costs associated with issuing debt in the most recent year.

108. Following this strategy, the appropriate compensation for a regulated business during the transition would be a blend of the synthetic historical trailing average and the post transition cost of debt. Specifically:

- Year 1: 100% weight to the 10-year synthetic trailing average;

- Year 2: 90% weight to the 9-year synthetic trailing average[20] and an 10% weight to the cost of debt in the first year of the transition;

- Year 3: 80% weight to the 8-year synthetic trailing average[21] and an 20% weight to the cost of debt in the first two years of the transition;

- Year 4: 70% weight to the 7-year synthetic trailing average[22] and an 30% weight to the cost of debt in the first two years of the transition;

- …

- Year 10: 10% weight to the 1-year synthetic trailing average[23] and an 90% weight to the cost of debt in the first 9 years of the transition.

109. Beyond this date the simple trailing average would be applied.

110. The AER imposed a transition different to the above. However, the AER transition did have similar properties in allowing the base rate of interest to be hedged (albeit at a rate lower than the AER compensated). The AER's approach can be thought of as identical to the above approach except:

- Instead of compensating the business for entering into a series of 1 to 10-year swaps the AER compensated them 'as if' all swap contracts were at 10-years (this overcompensated businesses by an amount dependent on the upward slope of the yield curve at the time of their transition); and

- Instead of compensating the business for historical average DRPs on its existing portfolio at the time of transition the AER compensated 'as if' the historical average DRP was the same as the prevailing DRP on the date the transition began. This may have over or under compensated businesses depending on the circumstances.

111. In its report for the AER, Chairmont found that the transition from the hybrid to the trailing average cost of debt in the way we have described in this section best reflects

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[20] Dropping the 1-year swap rate and the DRP from 10-years ago from the synthetic trailing average.

[21] Dropping the 1- and 2-year swap rates and the DRPs from 9 and 10-years ago from the synthetic trailing average.

[22] Dropping the 1-, 2- and 3-year swap rates and the DRPs from 8, 9 and 10-years ago from the synthetic trailing average.

[23] Retaining only the 10-year swap rates and the DRP from the very beginning of the transition the synthetic trailing average.

the cost of debt faced by a benchmark efficient entity funding itself using the hybrid debt management strategy and the AER's transition did not.[24]

> *AER's transitional arrangements do not reflect the required transactions for the BEE to transition its portfolio to the 'trailing average'. This is a structural problem with both the base rate and DRP, as follows:*

> *While a transition path for the base rate is required, the current measurement does not reflect the required transactions. It is currently measure using a 10-year term whereas NSPs can transition their portfolio using a series of 1-10-year swaps with maturities to coincide with the annual partial allowance resets. The average interest rate for a portfolio of 1 to 10-year swaps is usually a lower rate, including in 2014; and*

> *The DRP does not need to be transitioned because the NSWP already has a staggered floating rate debt portfolio. In treating DRP differently from the base rate it needs to be measured in relation to the swap curve, not the Commonwealth Government Securities (CGS) curve.*

112.   I agree with Chairmont's analysis. One possible explanation of the AER's approach was that, for whatever reason, it did not wish to use any historical data at the time its decision was made (when historical DRPs were known to be higher than prevailing DRPs). This may also explain why the AER was willing to overcompensate regulated businesses on the base rate during the transition.

113.   In any event, while the AER transition is inferior to the transition proposed by Chairmont and me, it is clearly superior to a move to a trailing average without transition. This is because businesses can effectively hedge their floating rate exposure to the base rate in the AER transition using the swap strategy identified by Chairmont and myself.

5.4   Advanced warning of no transition does not reduce regulatory mismatch risk

114.   It may be thought that the fact that the QCA is signalling in advance that a trailing average will be implemented without a transition in 2028 will allow Aurizon to adjust its debt portfolio gradually to align to the trailing average in 2028. However, this is not correct.

115.   So long as Aurizon is regulated under the on-the-day regime prior to 2028 it will need to adopt the hybrid strategy to minimise regulatory mismatch risk in the earlier regulatory periods. If Aurizon began transitioning to a trailing average prior

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[24]   Chairmont, Cost of debt: Transitional analysis, April2 2015, pp. 8-9.

to 2028 it would simply be incurring regulatory mismatch risk earlier (not avoiding it).

116.   In addition, to the extent that Aurizon will seek a negotiated settlement with its customers on the efficient debt management relevant to determining the cost of debt for the regulatory period commencing in 2027 adjusting debt management strategies prior to those negotiations may limit Aurizon's ability to implement alternate strategies that are more beneficial to Aurizon and its customers.

6 Question E: weighting the trailing average cost of debt/DRP

To what extent is weighting of the trailing average cost of debt (or DRP under the hybrid approach) appropriate? In answering this question, please consider the possibility that Aurizon's regulatory asset base may not be stable in the future (e.g., be materially declining in the future due to accelerated depreciation and may, or may not, experience large increases in the event that discrete capacity expansions are undertaken) and that the QCA's estimate of the benchmark efficient gearing may also change.

117. Weighting the trailing average cost of debt is important for firms that might experience large variations in their regulatory asset base (RAB) or changes in benchmark gearing over time. This is for two reasons:

    a. First, weighting the trailing average based on the amount of debt that must be raised in a period results in a more replicable cost of debt allowance and, therefore, reduces the regulated business's exposure to regulatory mismatch risk; and

    b. Second, weighting the trailing average promotes efficient investment incentives.

118. Of course, for a regulated business that is projected to have a relatively stable RAB over time (such as an electricity or water distribution business) these considerations may be less important and, therefore, the added complexity of implementing a weighted trailing average may not be justified. However, for businesses that have, or are likely to have, volatile debt raising requirements the above considerations can be important.

119. In this context, I note that the AER has, until now, applied an unweighted trailing average approach. However, there are large upcoming investment programs in electricity transmission (most notably the $2.3bn "EnergyConnect" project connecting NSW and South Australia). In this context, the AER is reconsidering its unweighted trailing average approach. The AER correctly states:[25]

    > *For a new capex program, using a simple trailing average implies that the capex program can financed with historical debt. However, new investment can only be financed with forward looking debt. If the prevailing return on debt is lower (higher) than the historical 10-year average return on debt, this new capex program will result in a positive (negative) NPV outcome if the return on debt is estimate using the simple trailing average.*

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25   AER, Rate of Return, Draft Debt Omnibus Paper July 2021, p. 3-23

120. This will mean that firms have an incentive not to invest when the prevailing cost of debt is above the trailing average cost of debt (when an investment has negative NPV). The ERA makes the same point:[26]

> *Under a simple trailing average, the marginal return on debt applying to a new investment is not the prevailing rate, but rather the trailing average estimate of the return on debt that is incorporated in tariffs.*
>
> *So for example, if a firm increases the size of its regulatory asset base by 5 per cent in any year, then it will receive the regulated rate of return on that investment for the year in which it is expected to enter the asset base, and for subsequent years. That rate of return will incorporate the trailing average. Hence the return to that investment will be based on the trailing average; it will not be the prevailing rate.*
>
> *It makes no difference whether the new investment, as a proportion of the asset base, is greater or lesser than the proportion of debt annually updated in the trailing average.*
>
> *Therefore, to the extent that the prevailing rate exceeds the trailing average cost of debt allowance incorporated in the tariff that applies to a new investment, then there will be an incentive to delay the forecast investment, so as to avoid making a loss on that investment. This is a clear distortion in investment incentives.*

121. If investments are primarily driven by maintaining service levels (avoiding the lights going out or keeping the drinking water safe) then it is likely that these investments will continue to be made in any event. However, when these investments are driven by expansions to service (such a new interstate electricity lines of development of new railroad services) then such incentive effects may be material.

122. The on-the-day and the hybrid approach are less affected by this because, by their nature, debt compensation is based on the prevailing conditions at the start of the regulatory period (for the full cost of debt for the on-the-day approach and for the base rate of interest for the hybrid approach). It is true that the hybrid approach has a trailing average component for the DRP. However, the base rate is the most volatile component of the cost of debt and, therefore, it is the component that is most important to set on a prevailing basis in order to promote efficient investment incentives.

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[26]   ERA, Final Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution Systems, p.302.

123. This was the NZCC's reasoning for preferring the hybrid benchmark over the trailing average method benchmark.[27]

> *The risk-free rate has been lower than its historical average over the last five years, although it remains volatile. This means some of the problems with a trailing average have been less apparent. In an alternative environment of increasing interest rates, we consider that it is likely to be harder for firms to invest without an allowance consistent with the prevailing risk-free rate. If a trailing average was in place under such circumstances, we would expect suppliers to ask for an allowance more consistent with the prevailing market rate for capital and it would be difficult for us to refuse such a request.*
>
> *...*
>
> *The evidence continues to suggest to us that the use of the prevailing rate provides better incentives for efficient investment, and the existence of the interest rate swap market means there is a low likelihood of a significant mismatch between the allowed risk-free rate provided for in the WACC and the interest costs paid by suppliers.*

124. Given the investment incentive problems associated with an unweighted trailing average (as set out by the ERA the NZCC, and potentially now being adopted by the AER) I consider that either:

  a. The hybrid benchmark be applied to Aurizon from 2028; or

  b. The QCA implement a transition to a weighted trailing average from 2028.

125. The hybrid approach could be implemented with or without weighting of the historical DRP. This is because, the incentive problems are largely addressed using a prevailing base rate at the beginning of the regulatory period. In this regard, my position is consistent with the NZCC. However, I note that the WA ERA does also weight the trailing average DRP component of the hybrid.

126. If the hybrid benchmark is not adopted, then I consider that it is important to adopt a weighted trailing average for Aurizon. This is based on dual considerations that may not apply equally to other businesses regulated by the QCA. Specifically:

  a. That there is scope for Aurizon's RAB to be volatile for the reasons put to me in Question E and these reasons may not apply with the same force to other businesses regulated by the QCA; and

  b. That Aurizon faces potentially material future discretionary investment decisions (decisions to both expand or, in the face of declining demand,

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27   NZCC, Input methodologies review decisions, Topic paper 4: Cost of capital issues, 20 December 2016, pp.26-27

contract the geographical areas served). This may be different to other
businesses that the QCA regulates (such as regulated water and port
businesses).

127. In this context the regulatory mismatch problems and the incentive problems with
an unweighted trailing average may be materially higher for Aurizon than other
regulated businesses.

128. These concerns may be exacerbated if, as is plausible, future climate change policies
(domestically in Australia or internationally) and/or technological changes begin to
make Aurizon's services to some customers commercially marginal post 2028. In
this scenario, Aurizon may well assess that its ability to recover its RAB from (the
ultimate mining) customers in the long run is uncertain. In this context, Aurizon
may already have disincentives to make new investments – even in maintaining
quality of service. If an unweighted trailing average is materially lower than
prevailing interest rates this would exacerbate those incentives. (This will be the
case if interest rates rise from their current historically low levels back towards
historical average levels.) To put it simply, if there is doubt about the long-term
relationship with customers short term disincentives to serve those same customers
can be powerful.

129. It is also the case that uncertainty about the long-term demand for coal may well
lead to accelerated depreciation of Aurizon's RAB in the near future. The AER has
recently agreed to accelerate the depreciation of EvoEnergy's RAB because the ACT
Government has announced climate change policy that will limit future gas usage.[28]
Similar policies are being considered by the New Zealand Government and the
NZCC is considering both accelerated depreciation and a WACC uplift now for
stranding risk.[29]

> *Due to the transition to a net zero emissions economy, there is an increased
> risk of the gas pipeline networks becoming economically stranded. This
> means there is a risk that GPBs may be unable to, at some point in the
> future, fully recover their historic capital investment as customers
> disconnect from GPB networks.*
>
> *...*
>
> *Measures that mitigate asset stranding risk by bringing forward cash flows
> are (in principle) NPV-neutral to suppliers and consumers, as long as
> economic network stranding does not occur. In the 2016 IM review we*

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[28] AER, Final Decision Evoenergy Access Arrangement 2021 to 2026 Attachment 4 Regulatory depreciation,
pp.7-10.

[29] NZCC, Resetting default price-quality paths for gas pipeline businesses from 1 October 2022 Process and
Issues paper, 4 August 2021, pp. 76, 79-82

introduced such a mechanism to allow shortening of asset lives for EDBs to mitigate economic stranding risk due to technological change.

Mitigation measures alone may be insufficient to ensure suppliers have an expectation of FCM. If so, ex-ante compensation may be appropriate. Ex-ante compensation mechanisms provide consumers with insurance against future price shocks, while **explicitly exposing suppliers to the risk that assets may be economically stranded in the future**. *We have previously provided ex-ante compensation for stranding risk for regulated fibre services."* [Emphasis added]

130. I am currently advising both the Australian Gas Pipeline Association (AGPA) and Vector (the largest New Zealand gas pipeline business) on the modelling and implementation of accelerated depreciation to avoid/limit asset stranding risk. It is at least plausible that a similar consideration may apply to Aurizon in the future.

131. If so, weighting of the trailing average may be very important. In some modelling scenarios, accelerated depreciation may mean that there is zero net borrowing requirement each year. This will occur if return of capital is sufficient to fund both new capex (which would likely be limited in this circumstance) and the refinancing of new debt falling due. In this situation, an unweighted trailing average may bear little relationship to the true weights in the regulated business's debt portfolio.

7 Question F: Relative merits of a hybrid vs trailing average regulatory benchmark

Please explain the relative advantages and disadvantages of the QCA draft report approach and the alternative approaches you have identified in your answer to question D? Please identify which of these approaches is most desirable in relation to:

a. Most accurately compensating for the efficient funding costs of a benchmark efficient firm in the same operating environment as Aurizon's network business;

b. Minimising the expected level of efficient funding costs incurred by a benchmark efficient firm in the same operating environment as Aurizon (and, therefore, minimising the amount paid by Aurizon's customers);

c. Minimising the complexity, and maximising the flexibility, of the regulatory regime to changing future circumstances (including instability in Aurizon's regulatory asset base).

132. Consistent with my answers to earlier questions, I consider that the hybrid benchmark has the following advantages over the simple trailing average cost benchmark for setting the cost of debt for Aurizon:

    a. The hybrid benchmark does not require a transition because it is consistent with the currently efficient debt management strategy;

    b. The hybrid benchmark will have lower expected costs than the trailing average due to the use of a shorter term for the base rate than 10-years;

    c. Due to its greater reliance on prevailing market interest rate, the hybrid benchmark:

        i.   does not have the incentive problems associated the unweighted trailing average;

        ii. can avoid the complexity associated with a weighted trailing average;

        iii. is more easily replicable than the unweighted trailing average and, therefore, has lower regulatory mismatch risk;

        iv. is more able to flexibly deal with material changes in the Aurizon's RAB over time; and

        v.   generally, preserves greater flexibility for any future changes in the benchmark debt management strategy (noting that it takes 10-years to transition into or out of a 10-year trailing average).

133. Consistent with my answer to Question C, the hybrid and/or a transition to the trailing average both have a further critical material advantage over the adoption of a trailing average *without transition*. The latter approach would expose to Aurizon

to untenable regulatory mismatch risk and, ultimately, an untenably high exposure to insolvency risk. This would impose significant expected costs and inefficiencies associated with potential financial distress and should not be contemplated by the QCA.

134. I also note that Aurizon's next regulatory reset with the QCA at which a trailing average would be implemented is in 2028. This exposes Aurizon to greater uncertainty about prevailing interest rates at that time than for other QCA regulated businesses and, therefore, greater regulatory mismatch risk. This distinguishes Aurizon from those other businesses regulated by the QCA.

135. I do not consider that there are any significant disadvantages associated with the hybrid method relative to the trailing average method.

136. The QCA does express the following reason for not adopting the hybrid method.

> *In response to the DBCT User Group, while we note that the hybrid strategy is one possible strategy, we consider that it is an artefact of the regulatory process—in particular, it is a product of a regulatory reset in combination with an on-the-day cost of debt. Under these conditions, some firms implement the hybrid strategy in response to the periodic resetting of rates. As such, it is not a strategy adopted by unregulated firms in competitive markets, as these markets have no regulatory resets.*

137. The last sentence of this statement is, in my view, correct. However, I also consider that this is not a relevant consideration for the QCA. Regulated businesses are not, by definition, operating in a competitive market. Regulated businesses will, in order to manage regulatory mismatch risk, always respond to the regulatory benchmark – be that the hybrid, the on-the-day or a trailing average cost of debt. The fact of regulation materially changes the operating environment for a regulated business and affects the most efficient debt management strategy.

138. The QCA has previously expressed the same view:[30]

> *However, the QCA does not consider that the regulator should attempt to 'match' the regulated firm to an unregulated, competitive firm in all respects, to the extent that the two firms are different. Regulated firms, by definition, are subject to regulation, which implies that they face circumstances that differ from circumstances that unregulated firms in competitive markets face. For example, regulated firms face periodic resets of their allowed revenues, while unregulated firms do not. There are a range of models applied to regulated firms; these models include revenue caps and price caps, for example. These models also contain other*

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[30]   Aurizon Network's 2017 draft access undertaking, December 2018, Appendix F: Assessment of individual WACC parameters, p.36

mechanisms, like cost pass-throughs, which affect the risk and, in turn, the cost of capital of the regulated firm. This is not the case for unregulated firms in competitive markets.

139. In my view, and consistent with the QCA views expressed above, the QCA should choose a debt management benchmark that is most efficient for regulated businesses. For the reasons set out in this report, I consider that this is the hybrid debt management strategy.

140. If the QCA's objective were to set a debt management strategy based on the practices of firms operating in competitive markets it would likely set a much lower leverage. For example, Aurizon's ultimate customers are large infrastructure owners in competitive markets. If the QCA used these firms to determine the benchmark debt management strategy it would set the debt leverage much lower (both Rio Tinto and BHP have debt leverage below 20%) and would likely adopt a longer tenor than 10-years. In my view, the QCA should not adopt such an approach precisely because debt management strategies of firms operating in competitive markets are less relevant (not more relevant) to what is an efficient debt management strategy for a regulated business.

8 Question G: Sole reliance on RBA

Please advise whether the QCA's proposal to, when setting the cost of debt, rely solely on estimates of 10-year BBB+ corporate bond yields as published by the RBA is good regulatory practice?

141. The QCA proposes to have sole reliance on RBA estimates of the cost of debt to inform the costs of implementing the benchmark efficient strategy.

142. Other things equal, it is good statistical, and therefore regulatory, practice to have regard to all of the available evidence. This is as true when estimating the regulated allowance for operating expenditures as it is when estimating regulated allowance for the cost of debt. The primary constraint on having regard to all the available evidence is the cost in terms of the regulator's (or stakeholders') time and resources in investigating that data and/or purchasing it from third party providers

143. Nonetheless, the use of a single source for the estimate of the benchmark cost of debt may be appropriate if:

    a. there is one source that is clearly more accurate than other sources; or

    b. it is materially more expensive (in terms of internal QCA resources, external purchase cost and/or stakeholder resources) to have regard to multiple data sources.

144. The QCA appears to have chosen to adopt the RBA methodology primarily on the basis that it is publicly available and, therefore, is inexpensive for stakeholders to replicate.[31]

    > *Our preference is to solely reference RBA data series for estimating the cost of debt in the future. The RBA is an independent and reputable provider of data series and uses transparent and robust methodologies to develop its data series. Further, the RBA's data series are readily available, unlike those prepared by the other third parties, which are currently available only with a paid subscription to these services. Adopting these sources would make it more expensive for stakeholders to replicate our method.*

145. I agree that the freely published nature of the RBA series makes it low cost for stakeholders to replicate the QCA's estimate. However, the benefits of low costs to stakeholder, such as they are, must be weighed against the costs of potentially having less accurate and less reliable cost of debt estimates. In my view, the latter costs outweigh the former.

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[31]   QCA, Draft report, rate of return review, June 2021, p.31.

146. Firstly, the RBA data is less reliable as source of market conditions in any given debt averaging period because it is only estimated on one day every month. This is important because, as the QCA itself explains: [32]

> *This short multi-day averaging period helps to mitigate the effect of single-day aberrations in rates, while determining a cost of debt that is relatively 'current', and therefore consistent with the on-the-day approach.*

147. If such an aberration happens to occur on the single day that the RBA estimates its cost of debt for that month, then this will strongly affect the cost of debt for the whole averaging period that falls within that month (or the month before).

148. Secondly, the RBA method is a weighted average of individual bond spread to swaps where those bonds closest to the target tenor are given more weight (according to a Gaussian kernel centred on the target maturity).[33] This method works well where there are a reasonable number of bonds close to the target tenor. However, this has not always been the case in the past for the 10-year tenor for BBB bonds (and cannot always be assumed to be the case in the future). Specifically, if there is a single bond with a tenor very close to 10-years and no other bonds close to 10-years tenor (e.g., all being less than 8 years or more than 12 years) then that single 10-year bond will receive a very high weight in the RBA estimate. This feature can lead to anomalous results.

149. Thirdly, the RBA series is mechanistically determined based on Bloomberg BVAL yields for individual bonds (subject to deterministic criteria for bond inclusion). By contrast, the Bloomberg BVAL 10-year BBB+ bond estimate involves an element of judgment by Bloomberg professionals. For example, Bloomberg professionals have, in the past, excluded Coca-Cola Amatil bonds with BBB+ credit ratings from its estimate of the BBB curve given that these bonds were not trading at yields consistent with a BBB+ credit rating. The RBA continued to use these bonds in its BBB curve construction after they were excluded by Bloomberg. Incenta (2018) advised the QCA that Bloomberg's policy was superior to that of the RBA, and it also excluded the Coca Cola bonds when estimating Aurizon's DRP for the QCA.[34] .

150. Finally, even if the RBA curve did not have these potential problems and there was no difference in accuracy between it and the Bloomberg or Thompson Reuters curves there would be material advantages in using an average simply because the inevitable errors in one data provider's estimate of the benchmark cost of debt (relative to the true but unknowable cost) are likely to be uncorrelated (or not

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[32]   QCA, Draft report, rate of return review, June 2021, p.26.

[33]   RBA Bulletin, New Measures of Australian Corporate Credit Spreads Ivailo Arsov, Matthew Brooks and Mitch Kosev, Bulletin – December Quarter 2013.

[34]   Addressing responses to Incenta's debt risk premium estimate for the 2017 draft access undertaking Queensland Competition Authority June 2018 p.3

perfectly correlated). This means that an average will be more accurate than any single estimate.

151. In this regard I note the AER published the below time series for its derived cost of debt from the three data sources (RBA, Bloomberg and Thompson Reuters).

Figure 8: AER time series for debt costs from three data providers
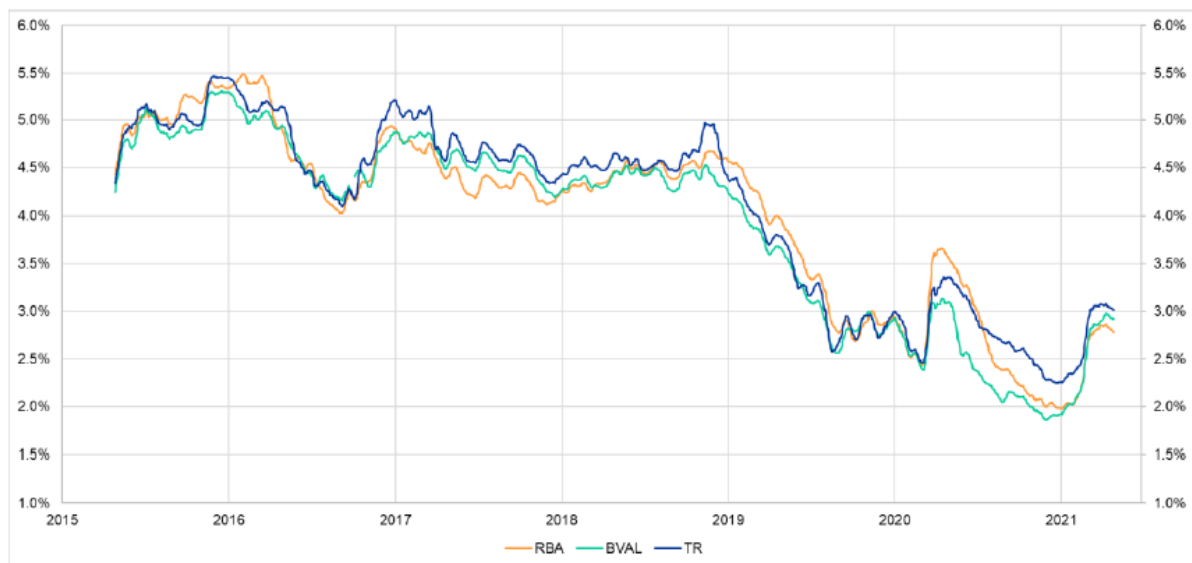
152. Divergences between these curves can be highly material and the RBA curve often swings from being the highest to the lowest of the curves (which is consistent with the observations I have made above).

153. Against these concerns associated with sole reliance on the RBA we must balance the benefit of doing so as determined by the QCA. Namely, the lower cost for stakeholders in replicating the QCA methodology. In my view this benefit does not outweigh the costs identified above. In this regard I note that:

   a. It is not obvious that small stakeholders (such as household consumers of regulated water services) will derive material utility from replicating the QCA methodology with or without sole reliance on the RBA series.

   b. Major stakeholders (such as Aurizon and its direct (rail haulage) and indirect (mining) customers) will have no material difficulty in replicating the QCA method having regard to Bloomberg and/or Thompson Reuters data.

   c. The QCA can report to stakeholders on the results of application of its method (just as the AER has done above) without those stakeholders having to purchase subscriptions to the relevant services.

9 Question H: Picking up ESG impacts on debt costs

Aurizon's network is an input into supplying coal haulage operations and, for some institutions, lending to a stand-alone rail manager of the CQCN would be in contravention of "environmental, social, and governance" (ESG) criteria that they have adopted. In your opinion, what implications might this have, either now or in the future, for:

a. *The debt costs for a benchmark efficient business in Aurizon's operating environment; and*
b. *The QCA's framework for estimating benchmark efficient debt costs.*

154.   In my answers to previous questions, I have noted that Aurizon's position as a supplier to a carbon intensive industry places uncertainty around its future path of RAB recovery and that this fact suggests there would be benefits from applying a flexible benchmark debt management strategy for Aurizon (i.e., the hybrid strategy). I have noted that these issues are being identified and dealt with now in the regulated gas industry (including by the NZCC which is examining both accelerated depreciation and a WACC uplift in response to uncertain future gas demand).

155.   Similar considerations will be relevant to the estimation of the cost of debt issued by a benchmark firm in Aurizon's operating environment. These costs may be raised above those for other similarly rated infrastructure providers who do not face the same operating environment. This could be caused by increased perceptions of stranding risks for Aurizon's assets.

156.   However, even if this is not the case, if, on ESG grounds, the pool of lenders willing to lend to Aurizon shrinks materially then Aurizon may face a combination of:

   a.   higher transaction costs associated with educating a sufficiently large number of lenders about its business in order to create a competitive market in lenders;

   b.   higher credit spreads due to a smaller and less competitive market in lenders.

157.   This reflects the fact that corporate debt markets require significant sunk research costs by lenders. This is especially true when the borrower has a complex business and/or uncertain future operating environment. Borrowers must invest materially in educating potential lenders about their business and lenders must be willing to invest in that education process.

158.   There is the potential for greater uptake of ESG criteria to reduce the pool of lenders who are already educated about Aurizon's business and/or are willing to be. This could raise both Aurizon's transaction costs associated with raising debt and the price at which it is raised relative to other similarly rated businesses who do not face this constraint. This effect is above and beyond the increased complexity of that

education process in a world where the uncertainty around the future of carbon intensive industries is increasing.

Appendix A   The costs of financial distress

A.1   Finance theory

159.   The cornerstone of modern finance theory on the optimal capital structure for a firm is the work of Modigliani and Miller (1958). The following three subsections summarise their results. The first describes the optimal capital structure in the hypothetical context of perfect (zero transaction costs) capital markets. The second describes optimal capital structure in the more realistic context of imperfect capital markets, where "frictions" exist. The third describes the special role of bankruptcy/insolvency costs in determining an optimal capital structure.

A.2   Modigliani-Miller with perfect financial markets

160.   The principal insight of Modigliani and Miller (1958) is that the level of risk in a firm is rather like the amount of air in a balloon. Squeezing one end of a balloon does not reduce the amount of air that is inside – it just shifts it to "the other end". In much the same way, issuing debt does not reduce the overall level of risk – it simply shifts it somewhere else – in this case, to equity. Miller (1991) made a similar observation some 30 years later:

> *Think of the firm as a gigantic tub of whole milk. The farmer can sell the whole milk as it is. Or he can separate out the cream and sell it at a considerably higher price than the whole milk would bring. (Selling cream is the analog of a firm selling debt securities, which pay a contractual return.) But, of course, what the farmer would have left would be skim milk, with low butter-fat content, and that would sell for much less than whole milk. (Skim milk corresponds to the levered equity.) The Modigliani-Miller proposition says that if there were no cost of separation (and, of course, no government dairy support program), the cream plus the skim milk would bring the same price as the whole milk.*

161.   In this quote Miller notes that issuing low risk debt securities is analogous to a farmer separating out cream from whole milk; namely:

   a.   the firm gets a good price (low interest rate) for its debt; but

   b.   the corollary is that the remaining equity is less desirable, and so requires a higher return to attract investors.

162.   What Modigliani and Miller demonstrated is that if financial markets are efficient and there are no transaction costs, any reduction in the cost of debt will be perfectly

offset by a higher cost of equity. A firm's capital structure therefore has no effect on its weighted average cost of capital (WACC). This "law of the conservation of risk" is comparable to the "law of conservation of energy" from the physical sciences. Like energy, risk cannot be destroyed – it can only be converted from one form to another.

163. It should be noted that Modigliani and Miller do not define "transaction costs" as encompassing simply the direct and observable costs of an activity (such as payments to printers for a prospectus). Rather, transaction costs are defined much more broadly to include costs associated with dealing/trading in imperfect markets. These include, for example, costs associated with imperfect management incentives (agency problems and incentive problems with asymmetric information), and costs associated with trading in illiquid markets and/or with financial constraints that force a business to make suboptimal decisions.

164. A further conclusion that flows from Modigliani and Miller is that, if financial markets are perfectly efficient with zero transaction costs, then no particular debt raising strategy will dominate any other. Irrespective of whether a business issues large or small amounts of debt, short-term debt or very long-term debt, callable or puttable debt, etc., its WACC will be the same.

A.3   Modigliani-Miller financial markets with frictions

165. Given the finding that, in frictionless financial markets, a business's capital structure simply does not matter then, if capital markets were frictionless, one would expect that firms with very similar attributes (products, competitors, cost structures and so on) would exhibit a great variety of capital structures. For example, some may have short term debt, others long term debt; some may have high gearing and others low gearing, and so on. There would be no 'common' strategy because, in the absence of frictions, there is no advantage from adopting any particular practice.

166. In actuality, businesses with similar attributes will often consistently adopt the same (or similar) debt raising strategies. The insight of Modigliani Miller is that consistently observed debt management strategies must be explained by a desire to minimise transaction costs (broadly defined) associated with less than perfect markets. That is, once one relaxes the assumption that capital markets are efficient, theory suggests that businesses (or subsets of businesses) will often adopt debt raising strategies that are designed to minimise exposure to those imperfections with a view to reducing transaction costs. Common strategies may therefore start to emerge.

167. A straightforward example is that businesses rarely, if ever, issue public debt at levels below a certain threshold, typically measured in the millions of dollars. This is because there are transaction costs associated with selling debt on both the seller

(prospectus/legal fees etc.) and buyer side (becoming informed about the quality of the debt etc.). For this reason, businesses will typically seek to avoid repeatedly incurring the same transaction costs by undertaking a smaller number of large debt issues (as opposed to a large number of small issues).

A.4 Special role of insolvency/bankruptcy costs

168. Once the Modigliani-Miller result was understood finance academics immediately attempted to explain, within the paradigm of transaction costs, businesses attempt to limit the volatility of cash flows by, for example, attempting to hedge their costs to their revenues – including by limiting the amount of debt finance used (because interest must be paid irrespective of revenues)? This question was especially pertinent given that the existence of tax as a transaction cost and the tax deductibility of interest costs would tend to suggest that 99.99% gearing would minimise tax costs (and therefore transaction costs).

169. The generally accepted answer was that there were very high levels of transaction costs associated with insolvency/bankruptcy and this was why firms tended not to adopt high levels of gearing. Baxter (1967)[35] was one of the first to make this point but many authors have built on his insight since.[36]

> *The purpose of the present paper is to explain, in the context of the Modigliani and Miller discussion, how excessive leverage can be expected to raise the cost of capital to the firm. It is argued that when account is taken of the "risk of ruin" a rising average cost of capital is perfectly consistent with rational arbitrage operations. Allowing for the possibility of bankruptcy is tantamount to relaxing the assumption that the anticipated stream of operating earnings is independent of the capital structure. [Baxter (1967)]*

170. Insolvency or near insolvency imposes costs on a range of parties, including:

   a. Debt investors: insolvency means that debt holders do not get paid when debts fall due (a technical default). Debt investors will typically incur significant costs to manage that disruption (such as curtailing consumption/investment in other activities or borrowing from third parties – often at penalty rates due to the financial distress of the original technical default). If they cannot manage the

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[35]   Baxter, N., "Leverage, Risk of Ruin and the Cost of Capital," Journal of Finance 22, September 1967, pp. 3956-403.

[36]   For example: Stiglitz, J.E., "A Re-Examination of the Modigliani-Miller Theorem," American Economic Review 59, December 1972, pp. 784-793; Kraus, A. and R.H. Litzenberger, "A State Preference Model of Optimal Financial Leverage," Journal of Finance, September 1973, pp. 911-922; and Kim, E.H., "A Mean-Variance Theory of Optimal Capital Structure and Corporate Debt Capacity," Journal of Finance 33, March 1978, pp. 45-63.

technical default, then they will themselves be rendered insolvent (unable to pay their debts as they fall due);

b. Equity investors: insolvency (or near insolvency) means that equity investors must stop receiving a dividend on their investment, which they have to manage in the same manner as debt investors and with analogous consequences. Equity investors will also suffer because the businesses reputation as a reliable borrower will be damaged. Moreover, existing equity investors may be forced to participate in a rights issue and/or a public equity raising to address the insolvency. Both of these options are likely to involve substantial transaction costs for equity investors.

171. Depending on the nature of the contracts with debt holders, insolvency may also give rise to debt holders taking full or partial control of the company and, potentially, to bankruptcy proceedings. Protracted legal battles may ensue between debt and equity holders (and between different groups of debt/equity holders) over the future of the firm. This may paralyse management, with the principal focus being on the division of the existing value of the firm (and debt holders attempting to ensure the maximum repayment of their debts) rather than on maximising the total value of the firm (including the equity stake).

172. These costs can destroy the value of a firm that would, had it adopted a less aggressive capital management strategy, never have become insolvent in the first place. Moreover, the disastrous nature of the potential transaction costs associated with insolvency (and bankruptcy), can see a firm in moderate financial distress quickly spiral into insolvency. This is because debt investors may be unwilling to fund the firm (or only at penalty interest rates) for fear of subsequent exposure to these costs. In other words, if there is perceived to be the potential for insolvency, this can become a self-fulfilling prophecy.

173. It is for these reasons that transaction costs associated with insolvency/bankruptcy play a key role in the 'real world' analysis of optimal capital management plans. Any change to capital management strategy can materially influence the likelihood (or perceived likelihood) of insolvency/bankruptcy, and so the probability of these substantial costs being incurred. It is important to recognise that there does not need to be an imminent threat of insolvency or bankruptcy for these factors to have a material bearing upon a firm's optimal capital management strategy. What matters is the potential effect of a particular strategy on expectations.

174. The "catch-all phrase" for this downside from gearing in the economic literature is the "costs of financial distress" (CFD). These costs come in many forms, including:

a. being forced to raise capital at disadvantageous rates in the future;

b. having to sell assets at "fire-sale" prices;

c. distortions to operational decisions that result from operating in financial distress; and,

        d. ultimately, the direct costs of litigation between stakeholders triggered by insolvency/bankruptcy.

175. These costs are significant. In a separate report prepared on behalf of Orion,[37] CEG Academic Consultant Professor Bruce Grundy has reviewed the literature on the CFD and is able to provide a reasonably tight bound for the expected CFD – including utility specific estimates.

176. Specifically, by relying on empirical estimates of the CFD in the finance literature, Professor Grundy estimates a range for the actuarially expected CFD of between 5% and 8.8% of firm value – with the upper end of that range being a utility specific estimate.

177. This implies that the present value of all expected future costs of financial distress amount to 5% or more of the RAB for a regulated business. This is the expected costs based on the small probability that a firm will be in financial distress in any given future year. Naturally, the cost incurred if a business is actually in financial distress will be an order of magnitude higher.

178. Unhedgeable regulatory allowances raise the expected CFD because it increases the probability of future financial distress.

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[37]   Professor Bruce Grundy, *The Costs of Financial Distress and Allowed Revenues for Regulated Firms*, 28 April 2014. And Professor Bruce Grundy, Observations on the Review of Submissions on the Cost of Debt and the TAMRP for UCLL and UBA Services Bruce D. Grundy 17 July 2014