



The market risk premium and 'top down' assessment



DRAFT report for Seqwater | 24 January 2022



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1 Overview and executive summary

1. On 7 December 2021, the QCA released a Draft Report in relation to its investigation into Seqwater's bulk water prices for 2022-2026.¹ The Draft Report implements the approach outlined in the QCA's 2021 Rate of Return Review.² In relation to the allowed return on equity, the QCA's approach is to:
 - a Construct a 'bottom-up' estimate using the CAPM parameterised with the prevailing risk-free rate and the 'Ibbotson' estimate of the average MRP observed over the historical period since 1958; and then
 - b Conduct a 'top-down' assessment to determine whether the output from this mechanical implementation of the CAPM produces a reasonable estimate of the required return on equity in the prevailing market conditions.
2. Frontier Economics has been engaged to provide our opinion on the QCA's approach to estimating the MRP and on its top-down assessment of the resulting estimate of the required return on equity.
3. We begin by noting that we agree with much of the QCA's analysis and conclusions in the Draft Report in relation to the return on equity. This includes the QCA's approach to, and estimates of, gearing, risk-free rate, and equity beta.
4. However, we have concerns about:
 - a The QCA's use of the Ibbotson approach as its highly influential primary estimate of the MRP; and
 - b The rather cursory nature of the top-down assessment that has been performed.
5. We demonstrate below that the QCA's Ibbotson approach for producing the primary estimate of the MRP is based on the assumption that investors determine their required return by always adding the same constant market risk premium to the prevailing risk-free rate. An implication of this assumption is that there is no relationship between the MRP and risk-free rate – the same MRP would be used whether the prevailing risk-free rate is unusually high or unusually low.
6. There are a number of problems with an approach that is based on this fundamental assumption:
 - a The assumption is inconsistent with the QCA's stated view that the true MRP varies over time;
 - b The assumption produces estimates of the required return on equity that are too high in some market conditions and too low in others;
 - c The assumption is not supported by theory or by empirical evidence. Indeed, CEPA has recently advised the Australian Energy Regulator (AER) that there is "no good evidence" to support this assumption;
 - d The assumption is inconsistent with market practice. Recent independent expert valuation reports have consistently concluded that, in the prevailing market conditions, the QCA's

¹ QCA, November 2021, *Draft Report: Seqwater bulk water price review*.

² QCA, November 2021, *Final Report: Rate of return review*, p. 1.



approach to implementing the CAPM produces estimates of the required return on equity that are unreasonably low;

- e The assumption is inconsistent with recent expert advice commissioned by the AER;
 - f The assumption is inconsistent with the finance literature; and
 - g The assumption produces estimates of the required return on equity that are implausible in some market conditions.
7. In our view, the evidence against the Ibbotson approach is compelling; particularly in the prevailing market conditions of historically low risk-free rates.
 8. Consequently, our view is that it is unsafe to set the allowed return on equity on the basis of an Ibbotson estimate of the MRP. As Dr Lally has advised,³ such an approach will result in allowed returns (and customer prices) being lower than the efficient level during periods of low interest rates and higher than efficient levels during periods of high interest rates.
 9. Thus, if the regulatory objective is to set an allowed return that reflects the required market cost of capital in each decision, rather than hoping that mis-matches between the allowed return and the required return might cancel out over time, there are fundamental problems in relying exclusively on the Ibbotson approach.
 10. Under the QCA's new approach to the rate of return, the Ibbotson-based estimate of the return on equity is subjected to a top-down assessment. The objective of this assessment is to determine whether the Ibbotson-based estimate is reasonable in the prevailing market conditions.
 11. However, we explain below that there are two fundamental problems with the top-down assessment that is set out in the Seqwater Draft Report:
 - a It has no regard to the very substantial body of evidence (summarised above and set out in more detail below) that identifies problems with the Ibbotson estimate of the MRP. In particular, the top-down assessment has no regard to the evidence that the Ibbotson approach under-states the required return on equity when interest rates are low (as they currently are); and
 - b The information that *is* considered as part of the top-down assessment is:
 - i cursory, comprising just two figures and one paragraph of text. Given the brevity of the analysis, it is unclear how it might have any real influence on the regulatory allowance; and
 - ii Applied in a way that almost guarantees that the preliminary Ibbotson estimate will not be disturbed. For example:
 - The preliminary estimate of the required return for Seqwater is compared with regulatory allowances for business that have been assessed as being of materially lower risk; and
 - The assessment considers the QCA's unique specification of the DGM, which we have previously explained is problematic, without considering any standard regulatory or commercial DGM estimates.

³ Lally, M., 9 April 2021, *An appropriate term for the allowed cost of capital*, Report commissioned by the AER, p. 33.



12. In the remainder of this report, we:
 - a Summarise the approach adopted by the QCA;
 - b Set out the evidence against exclusive reliance on the Ibbotson approach for estimating the MRP – particularly in the circumstances of low interest rates; and
 - c Provide some recommendations for how a more robust top-down analysis might be conducted.
13. Our key conclusion is that there are two potential bases for the use of the Ibbotson approach:
 - a The QCA might conclude or assume that the forward-looking MRP is constant over time and independent of the prevailing conditions in financial markets – against the evidence set out above and CEPA's advice to the AER that there is "no good evidence" for such an assumption;⁴ or
 - b The QCA might be prepared to accept an approach that is upwardly biased in some market conditions and downwardly biased in others – on the basis that these biases might tend to cancel out over time – against the goal of producing the best unbiased estimate of the market cost of capital at the time of each decision.
14. If the QCA chooses to adopt either of these positions, it would be preferable for a clear statement to be made to stakeholders.
15. If the top-down assessment is intended to be a substantive exercise that is designed to test the reasonableness of the Ibbotson estimate of the required return on equity, the very brief analysis presented in the draft decision should be revised substantially. In our view, a reasonable weighing of the relevant evidence should have real regard to:
 - a The substantial body of relevant evidence that has not been considered to date; and
 - b The problems that are identified in this report in relation to the evidence that has been considered.

⁴ CEPA, *Relationship between RFR and MRP*, June 2021, p. 44.



2 The QCA's 'bottom-up' approach to the allowed return on equity

2.1 The Ibbotson-based approach to the allowed return on equity

The allowed return should reflect the rate of return required by investors

16. The QCA's recent WACC Review concluded that the appropriate regulatory objective is to set the allowed return on capital to best reflect the rate of return that is required by the providers of debt and equity capital at the relevant time. In this regard, the QCA concluded that:

*The rate of return is the **return expected by investors** to compensate them for investing in a firm. Therefore, in relatively efficient markets, it is the **cost to the firm of obtaining debt and equity funding from investors**.⁵*

17. The QCA went on to explain the problems that arise if the allowed return is not set to reflect the rate of return required by investors at the time of the determination:

An inappropriate approach to determining the rate of return can have detrimental impacts:

- ***If the rate of return is too low, it could have a 'chilling' effect on investment, leading to inadequate capacity and/or service quality and potentially reducing revenues to the point where the financial sustainability of a regulated entity is endangered.***
- *If the rate of return is too high, leading to inefficiently higher prices, then users might use too little of the good or service, resulting in allocative inefficiency. Moreover, a regulated entity could be encouraged to overinvest, leading to inefficient capital allocation in the economy and higher prices, which could potentially reduce consumer welfare, discourage investment in dependent markets, or create incentives for inefficient bypass.⁶*

18. The QCA expanded upon this point as follows:

*The rate of return compensates investors for the time value of money and risk that they face in providing the assets that deliver the services that are subject to the regulatory regime. **If we set a rate of return that is too low (relative to an effectively competitive benchmark), then prices will be too low, causing excess consumption.** As a result, such an approach will potentially result in an inefficient amount of the good or service. Moreover, a rate of return that is too low will **also lead to investment that is too low** (relative to an effectively competitive benchmark), as the firm will not have an incentive to invest at the efficient level. This outcome will therefore compromise dynamic efficiency.⁷*

⁵ QCA, November 2021, *Final Report: Rate of return review*, p. 1, emphasis added.

⁶ QCA, November 2021, *Final Report: Rate of return review*, p. 1, emphasis added.

⁷ QCA, November 2021, *Final Report: Rate of return review*, pp. 6-7, emphasis added.



The allowed return on equity will be computed using the CAPM with forward-looking parameters

19. The QCA has decided that it will continue to use the Sharpe-Lintner CAPM to estimate the required return on equity capital.⁸ It will use the CAPM as a tool to estimate the return that would be required by equity investors in the prevailing market conditions. This requires the estimation of a firm-specific risk parameter (beta) and two market-wide parameters (the risk-free rate and the market risk premium).
20. The QCA noted that a number of submissions proposed that the market parameters (risk-free rate and MRP) should be estimated in an internally consistent manner:

*Seqwater and ARTC submitted that our approach to estimating the cost of equity involves the pairing of internally inconsistent parameters. Specifically, they considered that the use of a current risk-free rate should be paired with a current estimate of the MRP and that a historical risk-free rate should be used with an historical MRP estimate. Furthermore, they argued that our use of internally inconsistent parameters leads to return on equity estimates that are too low in the current financial environment.*⁹

21. The QCA then noted that it is seeking an estimate of the forward-looking required return on equity, not an estimate of the return that investors might have required over some historical period:

*We consider the relevant cost of equity when determining the WACC is the expected return on equity that investors require for investing in a regulated entity on a forward-looking basis.*¹⁰

22. The QCA noted that a forward-looking estimate of the risk-free rate is directly observable:

*As the risk-free rate is observable, our best estimate for the forthcoming regulatory period has involved using current Australian Government bond yields.*¹¹

23. This leaves the QCA in need of a forward-looking estimate of the MRP – the additional return (over and above the risk-free rate) that investors would currently require to commit equity capital to an investment of average risk. The internally-consistent forward-looking estimates of the risk-free rate and MRP would then be paired in the implementation of the CAPM.

A forward-looking estimate of the MRP requires either an assumption or some empirical analysis

24. In a recent report commissioned by the AER, CEPA has pointed out that there are two basic approaches for estimating a forward-looking MRP:
 - a Make an assumption about how investors determine the MRP that they require and use data and methods consistent with that assumption; or
 - b Use empirical analysis to let the data reveal the MRP that is currently required by investors.
25. For example:
 - a The Ibbotson approach reflects the assumption that investors always require the same MRP in all market conditions – regardless of whether risk-free rates are high, low, or in between. This assumption would lead to estimating the MRP as the average excess return over some

⁸ QCA, November 2021, *Final Report: Rate of return review*, pp. 53-54.

⁹ QCA, November 2021, *Final Report: Rate of return review*, p. 54.

¹⁰ QCA, November 2021, *Final Report: Rate of return review*, p. 54, emphasis added.

¹¹ QCA, November 2021, *Final Report: Rate of return review*, p. 54.



historical period. The assumption here is that the MRP is constant over time, independent of the level of the risk-free rate;

- b The Wright (or Total Market Return, TMR) approach reflects the assumption that investors always require the same real return on equity, which would lead to the taking of an average real return over some historical period. The assumption here is that the MRP changes over time to offset changes in the risk-free rate; and
- c The dividend growth model (DGM) approach involves no assumption about the relationship between the risk-free rate and the MRP. This approach produces an estimate of the total market return without embedding any such assumption – it lets the data indicate the nature of any relationship between the risk-free rate and MRP.

26. In this regard, CEPA has advised the AER that:

The forward-looking [DGM] approaches make no assumption about the relationship between the RfR and the MRP, it is derived as part of the estimation. For the historic approaches, an implicit assumption is required: for the "Ibbotson" approach it is an implicit assumption that the MRP is stable, whereas for the "Wright" approach it is an implicit assumption that it varies inversely with the RfR. Regulators place weight on historic measures of the MRP in determining the cost of capital, and an assumption – implicit or explicit – is therefore required.¹²

The bottom-up estimate is based on the Ibbotson approach

27. The QCA has indicated that its bottom-up estimate of the required return on equity will be based on an Ibbotson estimate of the MRP. The QCA describes the Ibbotson approach as an "historical" method¹³ and is clear about the fact that this method requires a particular assumption about the way investors go about determining their required returns:

The Ibbotson method—which assumes that investors use historical excess returns data to inform their expectations of achievable future returns—provides a plausible indication of the risk premium an investor requires on average for investing in the market. Relative to the other methods that we have assessed, we prefer the Ibbotson method for determining a value for the MRP. As such, we will use the Ibbotson method as the basis for setting the MRP as part of our future reviews.¹⁴

Summary of the bottom-up approach

28. In summary:

- a The QCA's goal is to obtain the best forward-looking estimate of the required return on equity;
- b To obtain this estimate, and to preserve internal consistency, the QCA will require the best forward-looking estimates of the risk-free rate and the MRP; and
- c The QCA's bottom-up analysis assumes that investors determine the (forward-looking) rate of return that they require on an asset of average risk by adding the prevailing risk-free rate to the average MRP observed over a long historical period. This is equivalent to assuming that the required MRP is constant, independent of the level of the risk-free rate.

¹² CEPA, 16 June 2021, *Relationship between RFR and MRP*, p. 4, emphasis added.

¹³ QCA, November 2021, *Final Report: Rate of return review*, pp. iii, iv.

¹⁴ QCA, November 2021, *Final Report: Rate of return review*, p. 55.



2.2 Evidence against the Ibbotson approach

Overview

29. We have noted above that the QCA's bottom-up WACC estimate is obtained using the Ibbotson approach to estimate the MRP. This embeds an assumption that can be characterised in two ways:
- It is assumed that the MRP is constant over time such that the same historical average would be appropriate in all market conditions; and
 - It is assumed that there is no relationship between the risk-free rate and the MRP – the MRP is the same whether the risk-free rate is high or low.

30. In our earlier report for Seqwater,¹⁵ we identified a number of problems with the assumption that underlies the Ibbotson approach – particularly the fact that the assumption of an effectively constant MRP is contradicted by a wide range of relevant evidence. The various problems with this assumption are set out below.

The 'constant MRP' assumption is inconsistent with the QCA's acceptance that the true MRP varies over time

31. In its 2014 Market Parameters Decision, the QCA recognised that:

...the market risk premium varies over time and its relationship with the risk-free rate likely changes,¹⁶

and that:

The likelihood that the premium is time-varying is generally well accepted.¹⁷

32. The QCA also considered at length whether its methodology had produced MRP estimates that were too low in a post-GFC environment in which interest rates had remained persistently low and there was some evidence of heightened financial uncertainty. Implicit within this aspect of the Market Parameters Decision was a recognition by the QCA that the true MRP required by investors is not fixed but changes with market conditions. If this were not the case, then there would have been no need for the QCA to even consider whether its methodology had delivered unreasonably low MRP estimates in certain market conditions.

33. The QCA noted that:

There is no question that market volatility increased during the GFC and that the market risk premium was probably elevated as a result.¹⁸

34. In the context of considering whether it should utilise the Wright/TMR approach, the QCA acknowledged that it could not:

¹⁵ Frontier Economics, 17 June 2021, *The market risk premium*.

¹⁶ QCA, August 2014, *Market Parameters Decision*, p. 81, emphasis added.

¹⁷ QCA, August 2014, *Market Parameters Decision*, p. 57, emphasis added.

¹⁸ QCA, August 2014, *Market Parameters Decision*, p.22.



*...preclude a possible **negative relationship between the risk-free rate and the market risk premium**. The question is the strength of the relationship, which is difficult to determine.¹⁹*

35. In the Aurizon Network 2017 DAU draft decision the QCA reaffirmed that:

*...it is likely that the MRP varies over time. This point is relevant given the observably low risk-free rate and the **plausible (negative) correlation between the risk-free rate and the MRP**.²⁰*

36. In its recent WACC Review, the QCA has confirmed that:

We consider that the MRP is likely to vary over time,²¹

and that there is consistent evidence of a negative relationship between the risk-free rate and MRP since the turn of the century.²²

The 'constant MRP' assumption is inconsistent with empirical and expert evidence

37. In our earlier report for Seqwater,²³ we noted that the Frontier Economics report submitted to the QCA in November 2016,²⁴ sets out a broad set of evidence that supports the conclusion that the total required return on equity has been remarkably stable over recent years, even as government bond yields have varied markedly. That evidence is inconsistent with an approach that sets the allowed return on equity to follow, one for one, the dramatic swings that we have seen in government bond yields.

38. The evidence from a whole range of respected market participants is consistent with the proposition that the required return on equity has remained relatively stable even as government bond yields have fallen. This position is supported by:²⁵

- a Central banks such as the Reserve Bank of Australia and the Federal Reserve Bank of New York;
- b Other regulators such as Ofgem, FERC, the ERA, and IPART. For example, in February 2021, IPART adopted a mid-point MRP estimate of 7.2%, based on a 50/50 weighting to long-run historical estimates and current forward-looking estimates;²⁶
- c Corporate advisory firms such as McKinsey and NERA-US; and
- d Independent expert firms such as EY, KPMG, Deloitte, and Lonergan Edwards.²⁷

39. That is, the market evidence suggests that, over recent years, the required return on equity has not moved up and down one-for-one with the material changes in government bond yields.

¹⁹ QCA, August 2014, *Market Parameters Decision*, p.22, emphasis added.

²⁰ QCA, 2017, *Aurizon Network 2017 DAU draft decision*, p. 82, emphasis added.

²¹ QCA, November 2021, *Final Report: Rate of return review*, p. 59.

²² QCA, November 2021, *Final Report: Rate of return review*, p. 59.

²³ Frontier Economics, 17 June 2021, *The market risk premium*, Section 3.4.

²⁴ Frontier Economics, November 2016, *The market risk premium*.

²⁵ The relevant references are set out in our earlier report: Frontier Economics, November 2016, *The market risk premium*.

²⁶ IPART, February 2021, *WACC Biannual Update*.

²⁷ The relevant references are set out in our earlier report: Frontier Economics, May 2017, *Recent evidence on the market risk premium*.



Rather, the required return on equity has remained more stable, indicating that in recent years the MRP has increased to absorb at least some of the dramatic fall in government bond yields.

The 'constant MRP' assumption is inconsistent with the finance literature

40. CEPA's review of the relevant finance literature, in a recent report commissioned by the AER, leads to the conclusion that:

Recent finance academic literature overwhelmingly uses a time-varying MRP.²⁸

That is, the academic literature does not adopt the assumption that the MRP is constant over time, even as the risk-free rate changes.

41. Indeed, CEPA concludes that there is "no good evidence" to support the assumption of a constant MRP.²⁹ CEPA further concludes that the assumption of a fixed total market return has as much theoretical support as the assumption of a fixed MRP:

There also appears to be as strong a theoretical basis for the argument that the RfR and the MRP are perfectly negatively correlated (the "Wright" approach) as there is for the argument that the RfR and total equity market returns are perfectly positively correlated (the fixed MRP approach).³⁰

The 'constant MRP' assumption is inconsistent with the approach adopted by independent expert valuation professionals

42. Independent expert reports prepared in the context of significant corporate transactions tend to recognise that the total required return on equity does not rise and fall one-for-one with changes in the risk-free rate. For example, Lonergan Edwards has observed that:

*Whilst, prima-facie, recent lower interest rates globally have lowered the total equity return required by investors, based on our experience, such investors have **not reduced their required rates of return by the full extent of the fall in risk free rates.**³¹*

43. KPMG has explicitly recognised an inverse relationship between the risk-free rate and MRP. Such a relationship implies that it would be inappropriate to pair a prevailing risk-free rate (that reflects the prevailing market conditions) with an historical average MRP (that reflects the historical average of market conditions):

*With market evidence indicating that **bond yields and the market risk premium (MRP) are inversely correlated**, it is important that any assessment of the risk-free rate should be made with respect to the position adopted in deriving the MRP. On balance, **we consider adopting the spot government bond yield in isolation of a change in the MRP (as discussed below) to be inappropriate.**³²*

44. And:

We have considered the historical relationship between the risk-free rate and the MRP and consider the general observation of an inverse correlation between the risk-free rate and the

²⁸ CEPA, June 2021, *Relationship between RFR and MRP*, p. 13, emphasis added.

²⁹ CEPA, June 2021, *Relationship between RFR and MRP*, pp. 6, 44.

³⁰ CEPA, June 2021, *Relationship between RFR and MRP*, p. 14, emphasis added.

³¹ Lonergan Edwards, November 2021, *Independent expert report for Prime Media Group*, p. 37.

³² KPMG, 11 October 2021, *Independent expert report for Spark Infrastructure*, p. 101, emphasis added.



*equity MRP generally applies to all developed markets. Consequently, in our view it is important to consider the risk-free rate in conjunction with, and not in isolation of, the expected equity MRP in order to reflect the inverse relationship between the MRP and the absolute level of the risk-free rate.*³³

45. KPMG has recognised that there are two approaches for estimating the risk-free rate and MRP in an internally consistent manner – long run historical average estimates of both parameters or contemporaneous forward-looking estimates of both parameters:

In this regard, two relevant options are available:

- *adopt a long-term historical MRP as a proxy for the expected MRP and apply a higher risk-free rate than the spot government bond yield to take into account the relationship highlighted above; or*
- *adopt the spot government bond yield as the risk-free rate and adjust the MRP for the perceived additional risks attached to equity investments implicit from historically low (or high as the case may be) bond yields to reflect the current investment environment and the inverse relationship between the two variables.*

*For the purposes of our analysis, we have adopted the former approach and applied a long-term historical estimate of the MRP and applied a higher blended risk-free rate than spot government bond yields, accordingly.*³⁴

46. Similarly, Grant Samuel has recently concluded that strict application of the CAPM (which it interprets as the use of a prevailing risk-free rate and an historical average MRP) does not produce reasonable estimates in the current market conditions:

*Strict application of the CAPM at the present time (using current parameters) gives results that are arguably **unrealistically low and understate the true cost of capital (primarily because of extremely low government bond rates)**. While the broad expectation is that government bond rates across the globe will remain extremely low for several years as the world economy seeks to recover from the impacts of the COVID-19 pandemic. **The discount rates produced by CAPM do not seem to accord with how investors set their expected returns** and are often inconsistent with other measures such as the Gordon Growth Model (which is based on observable dividend yield plus a long term growth rate).*

*Some academics and valuation practitioners consider it to be **inappropriate to add a “normal” market risk premium (e.g. 6%) to a temporarily depressed bond yield** and therefore advocate that a “normalised” risk free rate should be used. This practice has become increasingly common among broker analysts with an assumed risk free rate of around 2.5% not uncommon. Assuming a risk free rate of 2.5% would result in a CAPM WACC of 4.8-5.1%.*

*Alternatively, there is some evidence that risk premiums are higher when risk free rates are lower (i.e. implying a more stable overall cost of equity).*³⁵

³³ KPMG, 11 October 2021, *Independent expert report for Spark Infrastructure*, p. 102, emphasis added.

³⁴ KPMG, 11 October 2021, *Independent expert report for Spark Infrastructure*, p. 102.

³⁵ Grant Samuel, 16 December 2021, *Independent expert report for AusNet Services*, Appendix 3, pp. 14-15, emphasis added.



The 'constant MRP' assumption is inconsistent with the recent empirical analysis commissioned by the AER

47. As the approaches that are based on historical data (the fixed MRP and fixed TMR approaches) require an assumption about the relationship between the risk-free rate and the MRP, they cannot be used to derive or inform the nature of that relationship. That is, approaches that impose an assumption about the relationship clearly cannot be used to test whether the relationship exists or what form it might take.
48. CEPA notes that the forward-looking DGM approach requires no such assumption. Rather the nature of the relationship is determined as part of the estimation process.
49. In this regard, CEPA advises that:

*As a result, in our judgement a decision on what assumption to make about the MRP should rely on empirical evidence.*³⁶
50. And further, that the empirical analysis must be based on forward-looking estimates of the MRP:

*We consider that a decision on whether there is a relationship between the MRP and the RfR should be determined by empirical evidence. As we note above, the cost of equity and hence the MRP cannot be measured directly, but needs to be inferred. Consistent with commentary from leading finance academics, we take the approach that **the historical data is a measure of the realised MRP, and does not measure forward looking expectations. To assess whether there is a relationship between the MRP and the RfR, we have to look at forward looking measures.***³⁷
51. CEPA has performed an econometric analysis using forward-looking estimates of the MRP and has concluded that:³⁸
 - a There has been a strong and significant negative relationship between the risk-free rate and the MRP since central banks began utilising monetary policy to target inflation outcomes in the 1990s; and
 - b There is weak evidence of a negative relationship in earlier periods.
52. For example, CEPA shows, using Australian data, that there is a strong negative relationship between ex-ante forward-looking DGM estimates of the MRP and 10-year government bond yields since 2005, as summarised in **Figure 1** below.

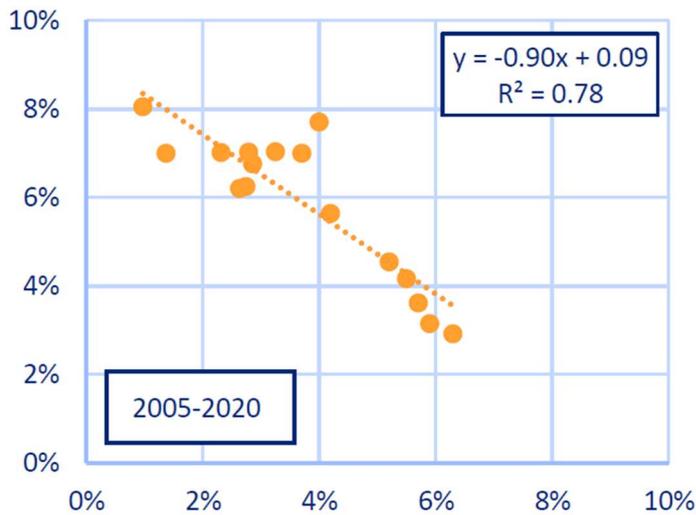
³⁶ CEPA, June 2021, *Relationship between RFR and MRP*, p. 5.

³⁷ CEPA, June 2021, *Relationship between RFR and MRP*, p. 6, emphasis added.

³⁸ CEPA, June 2021, *Relationship between RFR and MRP*, Section 5.



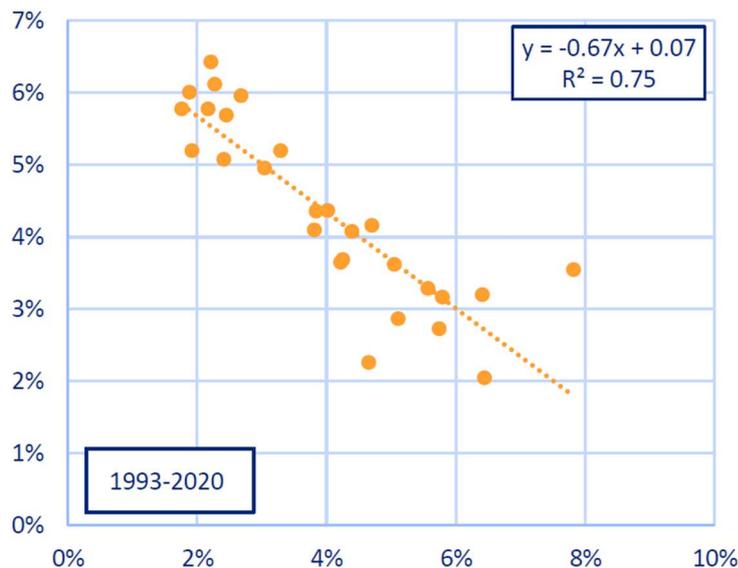
Figure 1: Relationship between risk-free rate and MRP: CEPA DGM estimates for Australian market



Source: CEPA, June 2021, Figure 5.6, p. 41. In this figure, the horizontal axis represents the risk-free rate (prevailing 10-year government bond yield) and the vertical axis represents the CEPA DGM estimate of the MRP.

- 53. CEPA further notes that a similar relationship has been demonstrated for the US market by Damodaran (2021),³⁹ as summarised in **Figure 2** below.

Figure 2: Relationship between risk-free rate and MRP: Damodaran DGM estimates for US market



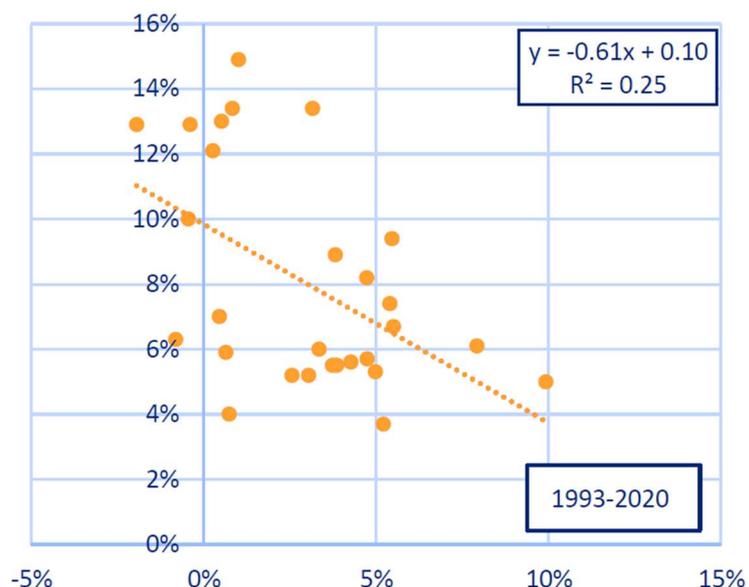
Source: CEPA, June 2021, Figure 5.9, p. 43. In this figure, the horizontal axis represents the risk-free rate (prevailing 10-year government bond yield) and the vertical axis represents the CEPA DGM estimate of the MRP.

³⁹ Damodaran, 2021, *Equity risk premiums (ERP): Determinants, estimation, and implications – The 2021 edition*.



54. CEPA also demonstrates that a similar relationship exists between risk-free rates and actual excess returns observed over the subsequent 10 years, as summarised in **Figure 3** below.

Figure 3: Relationship between risk-free rate and MRP: CEPA estimates for Australian market using observed excess returns



Source: CEPA, June 2021, Figure 5.8, p. 42. In this figure, the horizontal axis represents the risk-free rate (prevailing 10-year government bond yield) and the vertical axis represents the CEPA DGM estimate of the MRP.

55. CEPA concludes that:

Over the entire period of our estimation of the MRP, from 1936, there is a weak, negative relationship between the implied MRP and the RfR.

In the period since 1993, we consider there is a strong and convincing negative relationship between the implied MRP and the RfR.

The relationship that we find for Australia is consistent with the data from the US published by Damodaran.⁴⁰

56. CEPA observes that the strong negative relationship between the risk-free rate and MRP that has been documented since the 1990s coincides with the changes in central bank monetary policy actions that occurred at that time:

The relationship appears to be stronger in more recent years, from the 1990s and possibly earlier. We have not undertaken econometric testing to detect a statistically significant structural break, but it does appear that the relationship is weaker in the earlier part of the dataset. It is possible that the action of central banks from the 1990s to set monetary policy settings to drive out inflation had a material impact on asset returns and investor expectations. Prior to this period, monetary policy was less disciplined, and less predictable. The move to a more stable relationship between these variables from the 1990s is consistent with this hypothesis.⁴¹

⁴⁰ CEPA, June 2021, *Relationship between RFR and MRP*, p. 6, emphasis added.

⁴¹ CEPA, June 2021, *Relationship between RFR and MRP*, p. 43.



The 'constant MRP' assumption is inconsistent with the Brattle advice commissioned by the AER

57. In advice commissioned by the AER, Brattle has also noted that a negative relationship between the risk-free rate and MRP is consistent with commercial estimates:

*Bloomberg's analyses of the forward-looking MRP shows that **the MRP increases as the risk-free rate declines**, so that the resulting market return moves less than the risk-free rate.⁴²*

58. Brattle has also observed that a number of regulators specifically recognise a negative relationship between the risk-free rate and the MRP:

*The FERC has recognized that there is a statistically significant relationship between historical movements in interest rates and equity risk premiums (defined as the authorised return on equity for electric transmission utilities over and above utility bond rates). **When interest rate levels are relatively high, equity risk premiums narrow, and when interest rates are relatively low, equity risk premiums widen.**⁴³*

59. Brattle concludes that:

We do not think that the overall rate of return changes one-for-one with the change in risk-free rate.⁴⁴

and (p. 36) that:

the measured MRP commonly increases as the risk-free rate declines and vice versa.⁴⁵

The 'constant MRP' assumption is inconsistent with the regulatory objective of obtaining the best possible estimate of the market cost of equity for each determination

60. Dr Lally has recently advised the AER that the historical Ibbotson approach will lead to the required return on equity being over-estimated in some market conditions and under-estimated in other market conditions:

Since the MRP estimated by the AER is very stable over time (because high weight is placed on the long-term historical averaging methodology), and the true value is likely to fluctuate much more than this (with high values during unfavourable economic conditions and low values during favourable economic conditions), the MRP is likely to be overestimated during favourable economic conditions and underestimated during unfavourable conditions.⁴⁶

The 'constant MRP' assumption has implausible implications

61. In our earlier report for Seqwater,⁴⁷ we noted that the constant MRP assumption produces estimates of the required return on equity that:

- a Exhibit such high volatility as to be implausible; and
- b Imply that risk premiums *fall*, rather than *rise*, during financial crises.

⁴² ENA, October 2020, *Best practice framework for setting the allowed return on equity*, p. 39, emphasis added.

⁴³ ENA, October 2020, *Best practice framework for setting the allowed return on equity*, p. 38, emphasis added.

⁴⁴ Brattle Group, June 2020, *A review of international approaches to regulated rates of return*, paragraph 3.

⁴⁵ Brattle Group, June 2020, *A review of international approaches to regulated rates of return*, p. 60.

⁴⁶ Lally, M., 9 April 2021, *An appropriate term for the allowed cost of capital*, p. 33.

⁴⁷ Frontier Economics, 17 June 2021, *The market risk premium*, Section 3.4.



62. For example, the QCA's Market Parameters Decision adopted an MRP estimate of 6.5% on the basis of data as at December 2013, when the 10-year government bond yield was 4.29%.⁴⁸ Thus, the allowed return for a firm with an equity beta of 0.8 was 9.5% at that time.⁴⁹
63. By August 2016, the government bond yield had fallen to 1.9%.⁵⁰ The application of the same MRP to that figure produces an allowed return for a firm with a beta of 0.8 of 7.1%,⁵¹ which implies that the cost of equity capital declined by more than a quarter over a two-year period.
64. By August 2017, the government bond yield had recovered to 2.6%, such that the same MRP then produced an allowed return on equity of 7.8%. In August 2019, the government bond yield had fallen to 0.9%, such that the allowed return on equity for the same firm had fallen to 6.1%. That is, if a constant MRP is applied, the volatility in government bond yields flows one-for-one into volatility in the allowed return on equity.
65. For a firm with a beta of 0.8, the application of a constant 6.5% MRP implies that the required return on equity:
- a Was approximately 8.0% in December 2015;
 - b Fell to 7.1% by September 2016;
 - c Increased back to 8.0% by December 2016; and
 - d Fell again to 6.1% by August 2019.
66. That is, according to the QCA's approach, the required return for a regulated monopoly business fell by 90 basis points, and then increased by 90 basis points, within the space of just 12 months, and subsequently fell by 190 basis points over two years.
67. A regulated business having its allowed returns set during 2016 in line with the QCA methodology would have faced a timing lottery, with the regulatory outcome driven entirely by the vagaries of financial markets and the timing of the QCA determination in that year.
68. The variability in allowed returns that flows from the adoption of a fixed MRP allowance is illustrated in **Figure 4**.

⁴⁸ Market Parameters Decision, p. 72.

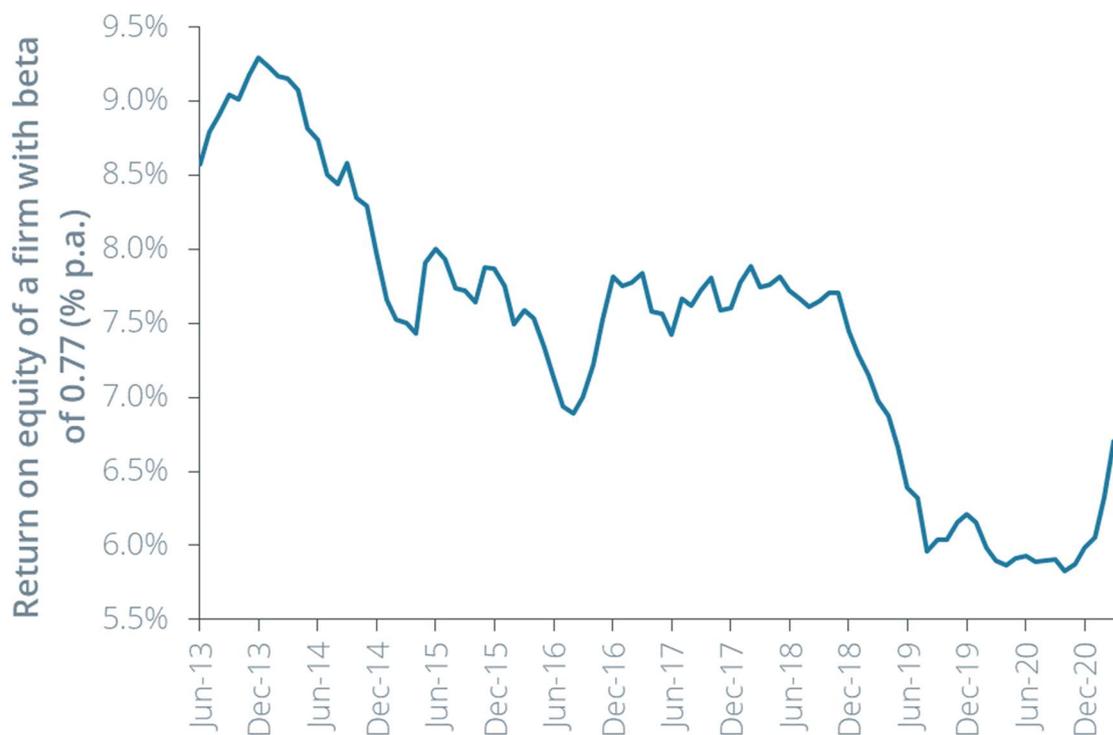
⁴⁹ $4.29\% + 0.8 \times 6.5\%$.

⁵⁰ RBA.

⁵¹ $1.9\% + 0.8 \times 6.5\%$.



Figure 4: The allowed required return on equity with beta of 0.77 and 6.5% fixed MRP



Source: RBA 10-year government bond yields; Frontier Economics analysis.

69. The implications of adopting an effectively constant MRP are also illustrated sharply by circumstances around the time of financial crises. For example, the yield on 10-year Australian government bonds was 6.4% in July 2008 (prior to the collapse of Lehman Brothers) and then fell to 4.2% by the end of that year. This dramatic fall in yields was due to a flight-to-quality, whereby investors moved funds out of risky investments into safe and liquid government bonds.
70. However, the approach of adding a fixed MRP to the prevailing government bond yield implies that the required return on equity actually *fell* by 2.2 percentage points over the peak of the global financial crisis. The implication is that a financial crisis serves to *reduce* the cost of equity capital. This implausible outcome is the mechanical result of adding a constant MRP to the prevailing government bond yield.

Summary of problems with the Ibbotson approach

71. The QCA's Ibbotson approach for producing the primary estimate of the MRP is based on the assumption that investors determine their required return by always adding the same constant market risk premium to the prevailing risk-free rate. An implication of this assumption is that there is no relationship between the MRP and risk-free rate – the same MRP would be used whether the prevailing risk-free rate is unusually high or unusually low.
72. There are a number of problems with an approach that is based on this fundamental assumption:
- The assumption is inconsistent with the QCA's stated view that the true MRP varies over time;
 - The assumption produces estimates of the required return on equity that are too high in some market conditions and too low in others;



- c The assumption is not supported by theory or by empirical evidence. Indeed, CEPA has recently advised the AER that there is “no good evidence” to support this assumption;
- d The assumption is inconsistent with market practice. Recent independent expert valuation reports have consistently concluded that, in the prevailing market conditions, the QCA’s approach to implementing the CAPM produces estimates of the required return on equity that are unreasonably low;
- e The assumption is inconsistent with recent expert advice commissioned by the AER;
- f The assumption is inconsistent with the finance literature; and
- g The assumption produces estimates of the required return on equity that are implausible in some market conditions.



3 The 'top down' assessment in the Seqwater Draft Report

3.1 The QCA's approach to top-down assessment

73. In its recent WACC Review, the QCA recognised that its 'bottom-up' estimate of the required return on equity (using the prevailing risk-free rate and the Ibbotson estimate of the historical average MRP) may not properly reflect the return on equity that is actually required by investors at a particular point in time. Thus, the QCA does not propose to use its bottom-up (Ibbotson-based) estimate in a mechanical way, but rather proposes to apply its judgment in assessing the reasonableness of that estimate in the prevailing market conditions:

We want to determine rates of return that are reasonable overall. Therefore, we want to assess whether the value estimated in the bottom-up exercise provides an overall WACC value that is reasonable. We would apply judgement in the context of the assessment as to whether the estimated WACC value is commensurate with the risks the firm faces, and therefore whether it provides the firm with an appropriate level of compensation. In doing so, we note the risks of not providing sufficient incentives to promote efficient investment or in setting prices that are inefficiently high.⁵²

74. The QCA notes explicitly that adjustment to the bottom-up WACC might be required during unusual market conditions, including periods of unusual interest rates:

One example of where we may adjust our bottom-up WACC value is if we are concerned that there are specific market conditions that might cause our bottom-up estimate of the cost of equity to be inappropriate. For instance, our bottom-up estimate may not fully account for circumstances where there is heightened investor risk aversion and/or market volatility or abnormal interest rates.⁵³

75. The QCA further states that:

in some economic conditions—such as when there is heightened investor risk aversion, market volatility or abnormal interest rates—we recognise that our approach may not result in a reasonable estimate of the cost of equity parameters. In these instances, rather than adjusting individual parameters, we will instead adjust our overall cost of equity estimate as part of our top-down analysis (see section 3.4.2).⁵⁴

76. In our view, the top-down assessment provides a critical role in the QCA's process – particularly in circumstances where the bottom-up estimate is based on an approach that is highly problematic (as set out above). Our view is that it is vital that all of the evidence about the problems with the Ibbotson approach are carefully considered as part of the top-down analysis.

⁵² QCA, November 2021, *Final Report: Rate of return review*, p. 18.

⁵³ QCA, November 2021, *Final Report: Rate of return review*, p. 18.

⁵⁴ QCA, November 2021, *Final Report: Rate of return review*, p. 55.



3.2 The top-down assessment in the Seqwater Draft Report

77. In its December 2021 Draft Report for Seqwater, the QCA:
 - a Estimated the required return on equity using its bottom-up CAPM approach based on:
 - i The prevailing forward-looking risk-free rate; and
 - ii The Ibbotson estimate of the historical average MRP; and
 - b Performed a 'top-down' assessment to test the reasonableness of the bottom-up estimate.
78. This represents the first application of the QCA's top-down analysis as part of its new approach to setting the allowed return on equity. It therefore provides all QCA stakeholders with an illustration of how the QCA's new approach for determining allowed returns will be implemented going forward.
79. The top-down assessment in the Seqwater draft report consists of:
 - a The two figures summarising various allowed returns from other regulators on page 75; and
 - b The paragraph of text at the top of page 76.
80. In our view, there are two fundamental problems with the top-down assessment that is set out in the Seqwater Draft Report:
 - a It has no regard to the very substantial body of evidence that identifies problems with the Ibbotson estimate of the MRP that forms the basis of the bottom-up estimate. In particular, the top-down assessment has no regard to the evidence that the Ibbotson approach understates the required return on equity when interest rates are low (as they currently are); and
 - b The information that *is* considered as part of the top-down assessment is:
 - i cursory. The top-down assessment consists of two figures and one paragraph of text. The analysis is too brief to offer a serious assessment that has some real possibility of affecting the outcome; and
 - ii Applied in a way that almost guarantees that the preliminary Ibbotson estimate will not be disturbed. For example:
 - The preliminary estimate of the required return for Seqwater is compared with regulatory allowances for business that have been assessed as being of materially lower risk; and
 - The assessment considers the QCA's unique and highly problematic specification of the DGM without considering any standard regulatory or commercial DGM estimates.
81. In the remainder of this section, we:
 - a Discuss relevant evidence that we recommend should be included within the top-down analysis; and
 - b Identify problems with the limited evidence that has been considered.



3.3 Further evidence that the QCA should consider

82. As noted above, our view is that the top-down assessment provides a critical role in the QCA's process – particularly in circumstances where the bottom-up estimate is based on an approach that is highly problematic. We consider it vital that all of the shortcomings of the Ibbotson approach are recognised as part of the top-down analysis so that undue confidence is not placed on estimates derived using that method.
83. None of the evidence about the problems with the Ibbotson approach have been considered as part of the QCA's existing top-down analysis.
84. In our view, there are two key branches of evidence that should be considered as part of the top-down analysis:
- a Evidence that there is no general basis for adopting the Ibbotson approach to the exclusion of other evidence about the MRP; and
 - b Direct evidence that the Ibbotson approach produces unreliable estimates of the required return on equity in the prevailing market conditions.

85. In relation to the general basis for the Ibbotson approach, the most recent evidence is the CEPA report commissioned by the AER. CEPA has advised the AER that the assumption of a fixed total market return has as much theoretical support as the assumption of a fixed MRP:

There also appears to be as strong a theoretical basis for the argument that the RfR and the MRP are perfectly negatively correlated (the "Wright" approach) as there is for the argument that the RfR and total equity market returns are perfectly positively correlated (the fixed MRP [Ibbotson] approach).⁵⁵

86. CEPA further explains that, when considering the historical data, there is "no good evidence" to support the assumption of a constant MRP.⁵⁶ This leads CEPA to advise that an approach that has real regard to estimates from the fixed TMR approach (either alone, or in combination with the fixed MRP approach) might provide a better estimate of the MRP:

In judging evidence on MRP using historic data, the AER can choose whether to use:

- *An assumption that the MRP is fixed (current approach)*
- *An assumption that the TRMR is stable ("Wright approach")*
- *An approach that has regard to both measures. This could be for example a weighted average of the two measures, that assumes that the MRP is related to the RfR, but the relationship is not one to one.*

The evidence indicates that the second two alternatives cannot be ruled out, and may provide a better estimate of the forward looking MRP consistent with the AER's duty.⁵⁷

87. In this regard, it is important to note that, by adopting the Ibbotson approach, the QCA has not avoided making a decision about the relationship between the risk-free rate and MRP. Rather, the

⁵⁵ CEPA, June 2021, *Relationship between RFR and MRP*, p. 14.

⁵⁶ CEPA, June 2021, *Relationship between RFR and MRP*, pp. 6, 44.

⁵⁷ CEPA, June 2021, *Relationship between RFR and MRP*, pp. 6-7, emphasis added.



adoption of the Ibbotson approach alone embeds an extreme assumption at one end of the spectrum – and assigns 100% weight to it.

88. The Seqwater Draft Report has effectively disregarded the substantial, and growing, evidence of a negative relationship between the risk-free rate and MRP (including empirical analysis and evidence of market practice) in both the bottom-up and top-down steps of its process. In our view, it is critical that the evidence of a negative relationship between the risk-free rate and MRP is properly considered somewhere in the QCA's process. But this has not occurred in the Seqwater Draft Report.
89. The previous section of this report also sets out direct evidence that the Ibbotson approach produces unreliable estimates of the required return on equity in the prevailing market conditions. This is clear, for example, in very recent independent expert valuation reports. As noted in the previous section of this report:
- a Lonergan Edwards has observed that:

*investors have not reduced their required rates of return by the full extent of the fall in risk free rates.*⁵⁸
 - b KPMG has explicitly recognised an inverse relationship between the risk-free rate and MRP:

*With market evidence indicating that bond yields and the market risk premium (MRP) are inversely correlated.*⁵⁹

and:

*it is important to consider the risk-free rate in conjunction with, and not in isolation of, the expected equity MRP in order to reflect the inverse relationship between the MRP and the absolute level of the risk-free rate.*⁶⁰
 - c Grant Samuel has recently concluded that strict application of the CAPM (which it interprets as the use of a prevailing risk-free rate and an historical average MRP) does not produce reasonable estimates in the current market conditions:

*there is some evidence that risk premiums are higher when risk free rates are lower (i.e. implying a more stable overall cost of equity).*⁶¹

and:

*The discount rates produced by CAPM do not seem to accord with how investors set their expected returns.*⁶²
90. None of this direct evidence of the Ibbotson approach producing unreliable estimates of the required return on equity in the prevailing market conditions has been considered in the top-down analysis presented in the Seqwater Draft Report.

⁵⁸ Lonergan Edwards, November 2021, *Independent expert report for Prime Media Group*, p. 37.

⁵⁹ KPMG, 11 October 2021, *Independent expert report for Spark Infrastructure*, p. 101.

⁶⁰ KPMG, 11 October 2021, *Independent expert report for Spark Infrastructure*, p. 102.

⁶¹ Grant Samuel, 16 December 2021, *Independent expert report for AusNet Services*, Appendix 3, pp. 14-15.

⁶² Grant Samuel, 16 December 2021, *Independent expert report for AusNet Services*, Appendix 3, pp. 14-15.



3.4 Shortcomings of the information that has been considered

91. In our view, there are also key problems with the brief top-down analysis that has been conducted. The top-down assessment in the Seqwater Draft Report consists of two figures and one paragraph of text. The analysis is too cursory to offer a serious assessment that has some real possibility of affecting the outcome, and it is applied in a way that almost guarantees that the preliminary Ibbotson estimate will not be disturbed.
92. The key problems with the top-down analysis that has been performed are as follows:
- a The top-down assessment of allowed returns (Figures 11 and 12) involves an invalid apples-with-oranges comparison.

The comparator businesses have largely been assessed by their regulators to have a lower level of risk than Seqwater.⁶³ It should be no surprise, that the allowed return for a business in one risk class would be different from that for a business in a different risk class.

Comparing the allowed return for Seqwater with the returns that other regulators have allowed for businesses that they consider to be less risky than Seqwater is a comparison that is meaningless at best and more likely misleading.

A more meaningful and appropriate apples-with-apples comparison would be to compare the total allowed market return (risk-free rate plus MRP) across regulators and with industry benchmarks. In this regard, Lonergan Edwards has recently observed that:

The current prevailing total expected equity return (being the sum of the risk free rate and market risk premium) adopted by most investment analysts [is] around 9% to 10% per annum.⁶⁴

- b The top-down assessment considers the QCA's unique and highly problematic specification of the DGM without considering any standard regulatory or commercial DGM estimates.

The problems with the QCA's unique specification of the DGM, which produces a time series of DGM estimates that are inconsistent with other DGM estimates, are well known. Our earlier report for Seqwater summarises the various problems with the QCA's specification of the DGM.⁶⁵

We note that:

- i The AER regularly publishes updates of its standard specification of the DGM;
- ii IPART regularly publishes updates of a range of standard commercial specifications of the DGM; and
- iii Commercial data services such as Bloomberg also publish standard specifications of the DGM.

All of those sources currently produce DGM estimates of the MRP that are materially higher than the estimate produced by the QCA's specification.

⁶³ That is, the regulators of these businesses have concluded that they have less systematic risk than Seqwater and have accordingly adopted lower equity betas.

⁶⁴ Lonergan Edwards, November 2021, *Independent expert report for Prime Media Group*, p. 37.

⁶⁵ Frontier Economics, 17 June 2021, *The market risk premium*, Section 5.5.



In light of the problems that have been identified with the QCA's specification, and the important role of the top-down assessment in the QCA's new WACC methodology, our view is that a better approach would be to have regard to a range of more standard and well-accepted DGM estimates.

- c The top-down assessment considers a short-term volatility index to the exclusion of all other indications of the prevailing market conditions.

The S&P ASX 200 volatility index is a measure of the implied volatility in the ASX 200 index over the subsequent 30 days. It provides an indication of the market's expectation of volatility over the next month.

This is clearly an incomplete proxy for investor risk premiums in that:

- i It has an extremely short-term focus; and
- ii At best, it provides some information about the expected quantum of volatility risk. It tells us nothing about the price that investors require, from time to time, for bearing risk.

As set out above, the finance literature, expert advice recently provided to the AER, and evidence of market practice all indicate that a better indicator of whether current equity risk premiums might be higher or lower than average is the level of the risk-free rate.

- d It is unclear what the purpose of the top-down assessment's consideration of recent average risk-free rates is.

The Seqwater Draft Report contains a comparison of the prevailing 10-year government bond yield with its 5-year and 10-year historical averages. It is not clear why this comparison has any relevance at all to the question of whether the bottom-up allowance is reasonable in the prevailing market conditions.

3.5 A reasonable weighing of the relevant evidence

- 93. We note that there are two potential bases for the use of the Ibbotson approach:
 - a The QCA might conclude or assume that the forward-looking MRP is constant over time and independent of the prevailing conditions in financial markets – against the evidence set out above and CEPA's advice to the AER that there is "no good evidence" for such an assumption;⁶⁶ or
 - b The QCA might be prepared to accept an approach that is upwardly biased in some market conditions and downwardly biased in others – on the basis that these biases might tend to cancel out over time – against the goal of producing the best unbiased estimate of the market cost of capital at the time of each decision.
- 94. If the QCA chooses to adopt either of these positions, it would be preferable for a clear statement to be made to stakeholders.
- 95. We recommend that the current top-down analysis, which is too cursory to offer any real scrutiny of the QCA's primary, Ibbotson-based estimates, could be improved by considering in detail:
 - a The substantial body of relevant evidence that has not been considered to date; and

⁶⁶ CEPA, *Relationship between RFR and MRP*, June 2021, p. 44.



- b The problems that are identified in this report in relation to the evidence that has been considered.

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