Market risk premium issues in the QCA's draft report for Seqwater

REPORT PREPARED FOR SEQWATER

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1 Executive summary

1.1 Instructions

1 Frontier Economics has been engaged by Seqwater to provide expert advice in relation to the estimation of the market risk premium (MRP) within the regulatory framework used by the Queensland Competition Authority (QCA).

2 Specifically, we have been asked to provide our views about:

a. The approach proposed in the Draft Report for Seqwater, where the QCA adopts an estimate of the MRP below what it considers to be the best available estimate that is commensurate with the prevailing financial market conditions; and

b. The best available estimate of the MRP, having regard to the framework and estimation methods employed by the QCA.

1.2 Primary conclusions

1.2.1 Setting the MRP within an incentive-based regulatory framework

3 Our view is that the regulator should set the allowed return equal to what it considers to be appropriate in the prevailing market conditions.

4 The QCA operates within a standard incentive-based regulatory framework. Such a framework requires (among other things) that investors are provided with a return that provides them with appropriate compensation for the risk involved. If a regulator sets the allowed return below what it considers to be appropriate in the prevailing market conditions, there are important implications for economic efficiency, pricing signals, and investment incentives.

5 In its submission to the QCA, Seqwater accepted that the QCA would set the MRP to 6.5% as it had done in every decision in all market conditions since 2014.[1]

6 Seqwater concluded that the 6.5% figure was inadequate and provided evidence that the best available estimate of the MRP was above 6.5%. Seqwater also submitted that it does not agree with the QCA's approach to estimating the MRP and noted that it looked forward to participating when the QCA next reconsidered its approach to the MRP – with a view to producing an estimate that was properly consistent with the prevailing market conditions.[2]

7 Rather than revising its approach to the MRP through a broad consultative approach (as other regulators have done and as the QCA did in its 2014 Market

[1] Seqwater, 2017, Submission Part B, p. 57.

[2] Seqwater, 2017, Submission Part B, p. 57.

Parameters Decision), the QCA has proposed a number of fundamental changes to its MRP approach in draft decisions for individual businesses. These changes include:

a. Changing the definition of the MRP, so it is no longer interpreted as a premium to the 10-year risk-free rate but as a premium to the 3-year or 4-year risk-free rate (whatever is the length of the relevant regulatory period);

b. Changing the relative weights applied to the various approaches used to estimate the MRP; and

c. Introducing new evidence and updating existing evidence.

8 In its Draft Report for Seqwater, the QCA proposes to set the allowed MRP to 6.5% even though it considers the best available estimate to be 7%.[3]

9 In our view, a number of problems arise when a regulator sets a parameter below the figure that it considers to be appropriate and commensurate with the prevailing market conditions:

a. Inconsistent with incentive-based regulation.

Just as it would be inappropriate for a regulator to conclude that "We'll allow an MRP above our best estimate because that is what the regulated firm says it needs," it would be equally inappropriate for a regulator to conclude that "We'll allow an MRP below our best estimate because the regulated firm will accept that." In both cases, the allowed return is not what the regulator considers to be an appropriate return that is commensurate with the risks involved. In both cases, economic efficiency is violated and pricing and investment signal distortions flow through the economy.

b. Inconsistent with the approach to the risk-free rate.

The Draft Report contains an updated estimate of the risk-free rate, higher than the figure that Seqwater submitted. The higher figure was used on the basis that the risk-free rate is a time-varying parameter, so an updated estimate that is commensurate with the prevailing market conditions should be used. We see no reason why the same approach should not be applied to the MRP, which the QCA also considers to be a time-varying parameter that changes with financial market conditions.[4]

c. Introduction of bias

A downward bias will be introduced if the regulator always adopts the lower of (a) what it considers to be the best available estimate,

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[3] QCA, 2017, Seqwater Draft Report, p. 57.

[4] QCA Market Parameters Decision, p. 81.

and (b) what the regulated business might be willing to accept in the short run.

d. Incentive for ambit claims

Regulated businesses will have an incentive to always overstate parameters to ensure that they receive any uplift in the event that the regulator is considering an unannounced review of a market parameter within the context of their individual regulatory process.

1.2.2 Prevailing estimates

10 Our view is that the QCA's current MRP estimate of 7.0% is conservatively low in a number of respects, so that an MRP of at least 7% should be adopted.

11 In Section 3 of this report we consider a number of steps that the QCA takes in its estimation process that (a) are contrary to standard regulatory and commercial practice, and (b) have the effect of reducing its MRP estimate.

Relative weights

Siegel approach

12 The QCA affords material weight to its "Siegel" approach. In our view, the Siegel approach is unreliable and inappropriate and should not be afforded material weight. In particular, it is unorthodox to revise the historical data by:

a. Identifying which historical events would have been expected by investors at the time, and which would have been unexpected by investors at the time; and

b. Making an adjustment to convert the data into what one considers it would have looked like if the unexpected events had not occurred.

This is because there is no objective standard by which particular historical data periods may be said to be unexpected and therefore in need of "adjustment."

Relative weight to Wright approach

13 In its UT5 Draft Decision, the QCA notes that it has attempted to test the Ibbotson/Siegel and Wright assumptions and concludes that there is no significant difference between the two.[5] However, the QCA applies almost three times as much weight to the Ibbotson/Siegel approach as to the Wright approach.

Survey estimates

Adjustment for imputation credits

[5] QCA, 2017, UT5 Draft Decision, p. 493.

14 Every other approach that the QCA uses to estimate the MRP has been adjusted to reflect the QCA's assumed value of imputation credits.[6] That is, all other approaches produce *with-imputation* estimates of the MRP. However, for the survey approach, the QCA uses an average of its with-imputation and without-imputation estimates.

Adjustment for the term of the risk-free rate

15 In the 2014 Market Parameters Decision, the QCA assumed (reasonably in our view) that survey respondents supply a MRP estimate relative to the long-term (e.g., 10-year) government bond yield. It now interprets survey responses as though they have been provided relative to short-term government bond yields on the basis that some respondents "might even" do this.[7]

16 However, both of the surveys that the QCA uses contain clear evidence that respondents are providing MRP estimates relative to a 10-year risk-free rate or even higher figure.

Adjustment for margin to risk-free rate

17 Both of the surveys that the QCA considers indicate that respondents use a risk-free rate materially in excess of that adopted by the QCA. However, that evidence receives no weight in the QCA's process.

Introduction of the KPMG survey

18 The QCA has previously relied on the Fernandez surveys. The Fernandez estimate has recently increased and the QCA has reduced the weight afforded to it.

19 The QCA's consultant suggests that the higher figure may not be a reflection of the change in market conditions but *may* be the subject of a computation error, typo or transcription error.[8]

20 The QCA also notes that the recent Fernandez survey has only 26 respondents. However, the sample sizes for 2009 to 2012 (i.e., prior to the Market Parameters Decision) were 23, 21, 40 and 17, respectively.

Cornell (DGM) estimates

Discretionary downward adjustments

21 In a previous report submitted to the QCA, we set out a number of discretionary adjustments that the QCA makes when constructing its Cornell DGM estimates of the MRP, explaining why we consider that those special adjustments are unwarranted.[9] The key adjustments are:

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[6] That is, a gamma of 0.46.

[7] QCA, 2017, UT5 Draft Decision, p. 477, emphasis added.

[8] Lally (2017), p. 20.

[9] Frontier Economics, 2017, An updated estimate of the market risk premium, September.

a. The QCA makes a reduction of 0.5%, 1.0% and 1.5% to its estimate of long-run GDP growth; and

b. The QCA assumes that investors have two different required returns on equity, an 11.8% required return on all cash flows beyond year 10 and a lower required return on all cash flows before year 10.

22 In addition to those discretionary downward adjustments, there are two more reasons that arise in relation to the QCA's most recent estimates.

The QCA has not updated its long-run mean estimate

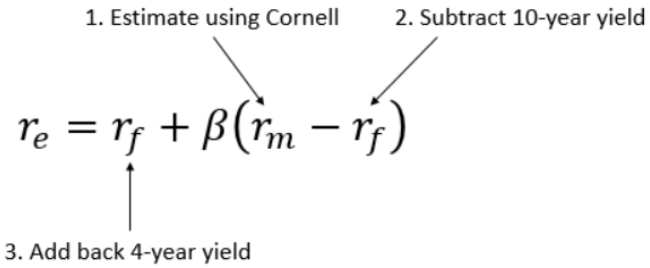
23 When implementing its Cornell approach, the QCA has updated all aspects of the data, but has left its estimate of the expected 10-year government bond yield frozen at 2013 levels, which has the effect of materially reducing the MRP estimate.

The Cornell DGM estimate is computed relative to the 10-year risk-free rate

24 The QCA estimates the MRP relative to the 4-year government bond yield for all other MRP approaches, but relative to the 10-year yield for its Cornell approach.

25 The effect of the inconsistency is made clear when considering how this information is used within the CAPM, as shown in Figure 3 below.

Figure 1: Inconsistency in QCA approach to Cornell MRP estimate



26 In the current market conditions, this inconsistency results in the MRP estimate being biased downwards by more than 0.5%.

2 Implications of the QCA's approach to the market risk premium

2.1 Context

Seqwater submission

28 Seqwater submitted an MRP of 6.5% on the basis that it:

> Aligns with the QCA's 2014 Market Parameters Decision and all subsequent QCA decisions.[10]

29 The submission clearly stated that Seqwater does not agree with the QCA approach to estimating the MRP and that it considered the QCA's 6.5% figure to be inconsistent with the prevailing market conditions and with the observed commercial practice:

> We have adopted, but do not agree with, the QCA's approach to estimating the MRP. For future reviews we will consider submitting an estimate based on what we consider are superior and more robust methodologies. In doing so, we will seek to obtain an estimate that is properly commensurate with the prevailing market conditions, and which is more consistent with the observed commercial practice.[11]

30 The Seqwater submission went on to document that key concerns are that the QCA's approach of applying an effectively constant MRP is (a) inconsistent with that parameter varying over different financial market conditions and (b) produces volatility in allowed returns and customer prices:

> …we are concerned that the QCA's approach produces an effectively constant MRP estimate in all market conditions. In our view, the MRP is a parameter that varies over different market conditions – it is unlikely that investors would require the same premium for risk during a prolonged economic expansion as they would during a financial crisis – yet that is what the QCA's approach suggests. The result of the QCA's approach is higher volatility in allowed returns (as they vary one-for-one with changes in government bond yields) and consequently higher volatility in customer prices.[12]

31 The Seqwater submission included a report from Frontier Economics,[13] which concluded that the MRP is a parameter that varies over different financial market conditions and should be updated from time to time to reflect the prevailing market conditions:

> We consider that the MRP is a parameter which changes over time with changes in conditions in financial markets. Therefore, the MRP should be

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[10] Seqwater, 2017, Submission Part B, p. 57.

[11] Seqwater, 2017, Submission Part B, p. 57.

[12] Seqwater, 2017, Submission Part B, p. 57.

[13] Frontier Economics, 2017, The weighted-average cost of capital for Seqwater, July.

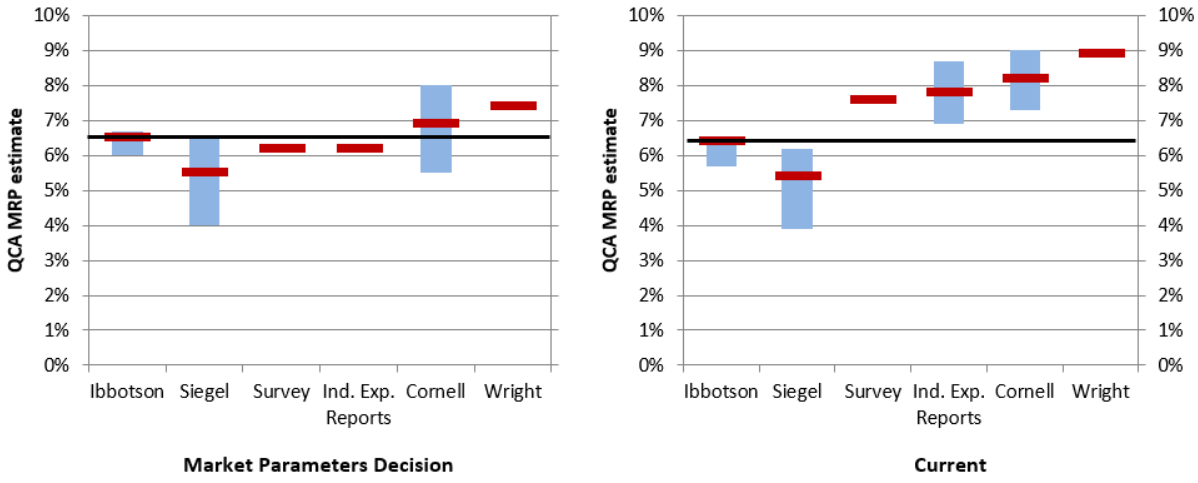
> informed by the latest available evidence and should not be fixed to a figure that was derived from evidence that is now more than three years out of date.[14]

32 After reviewing the updated evidence, Frontier Economics (2017) concluded that:

> …all of the QCA's methods which are capable of changing to reflect the prevailing market conditions now indicate a materially higher MRP since the QCA first adopted the 6.5% figure…We are of the view that the current evidence supports a market risk premium above 6.5%.[15]

33 In summary, the Seqwater submission was clear about the fact that Seqwater considered a 6.5% MRP to be inadequate in the financial market conditions at the time of the submission. The Seqwater submission also provided the QCA with updated evidence to support the contention that the MRP had risen since the 2013 data that was the basis for the Market Parameters Decision, reproduced in Figure 2 below.

Figure 2: Evolution of QCA MRP evidence



Source: Frontier Economics (2017), p. 17.

34 In its submission, Seqwater accepted that the QCA would set the MRP to 6.5% as it had done in every decision in all market conditions since 2014.

QCA Draft Report

35 In its 2017 Draft Report, the QCA begins by noting that the Seqwater submission had accepted that a 6.5% MRP would be used, consistent with the QCA's 2014 Market Parameters Decision and all subsequent decisions up to the time of the submission:

> The MRP is the additional return that an equity investor requires to be compensated for the risk of investing in a market portfolio of risky assets

[14] Frontier Economics (2016), p. 9.

[15] Frontier Economics (2016), pp. 16-17.

> against purchasing a risk-free asset. Seqwater proposed a MRP of 6.5 per cent based on the QCA's past decisions.[16]

36 The Draft Report goes on to note that the QCA has updated its MRP estimates and now considers that a 7% MRP best reflects the prevailing market conditions:

> We updated our MRP estimation methods for recent data, and assessed each resulting estimate on the basis of the relative strengths and weaknesses of the underlying method. In coming to a point estimate, we took these considerations into account and exercised our judgement. Our conclusion is that the best empirical estimate of the MRP is 7.0 per cent at this time.[17]

37 The Draft Report then compares the "equity premium"[18] from the Seqwater submission to the QCA's current best estimate of the appropriate equity premium:

> We have assessed Seqwater's proposed equity premium (4.98 per cent[19]) against an equity premium that reflects our best empirical estimates of each parameter (5.39 per cent[20]) in the context of our overall approach to this review. An appropriate.[21]

38 The Draft Report concludes that the lower (6.5%) MRP should be used:

> As Seqwater's proposed equity premium is lower than our estimate of the benchmark equity premium, we consider it is consistent with the aim of protecting consumers from monopoly pricing. We also consider that it is consistent with the promotion of efficient investment because
>
> - as a monopoly business, we expect Seqwater would propose a cost of equity (as part of an overall WACC) that provides sufficient incentives to invest.
> - it is within the range of recent regulatory decisions.[22]

2.2 Implications of the QCA's approach to MRP

39 This sub-section of the report considers the implications of the Draft Report's approach to MRP. Specifically, we consider the implications of the QCA maintaining the 6.5% figure for MRP in circumstances where the QCA itself considers that a 7% figure is commensurate with the prevailing financial market conditions.

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[16] QCA, 2017, Seqwater Draft Report, p. 54.

[17] QCA, 2017, Seqwater Draft Report, p. 54.

[18] The product of the equity beta and MRP. The Seqwater submission and QCA consultant report and QCA Draft Report all agree on an equity beta of 0.77. Consequently, the equity premium is obtained by multiplying the MRP by 0.77.

[19] 0.77 × 6.5%. There appears to be some rounding in the QCA's calculation.

[20] 0.77 × 7.0%.

[21] QCA, 2017, Seqwater Draft Report, p. 54.

[22] QCA, 2017, Seqwater Draft Report, p. 57.

Incentive based regulation

40 The foundation of incentive-based regulation is that the regulatory allowance is set equal to the benchmark efficient cost of capital. This approach ensures that customers pay an economically efficient price and that investors receive an appropriate normal return on capital. It also ensures that prices create appropriate incentives for efficient investment.

41 In this regard, the QCA Act requires that prices should:

> …generate expected revenue for the service that is at least enough to meet the efficient costs of providing access to the service and include a return on investment commensurate with the regulatory and commercial risks involved.[23]

42 The QCA's longstanding practice has been to reduce submitted parameters where it considers that the submission would result in an allowed return that is too high. But incentive-based regulation equally requires that a submitted parameter should be increased where the regulator considers it is too low. That is, the regulator should set the allowed return that it considers to be appropriate and commensurate with the prevailing financial market conditions.

43 In summary, just as it would be inappropriate for a regulator to conclude that "We'll allow an MRP above our best estimate because that is what the regulated firm says it needs," it would be equally inappropriate for a regulator to conclude that "We'll allow an MRP below our best estimate because the regulated firm will accept that." In both cases, the allowed return is not what the regulator considers to be an appropriate return that is commensurate with the risks involved. In both cases, economic efficiency is violated and pricing and investment signal distortions flow through the economy.

44 Just as a regulator will disallow a parameter that it considers to be too high, it should also reject submissions that it considers to be too low. For example, an independent economic regulator should look through an asset owner that may be willing to accept sub-normal returns for a period (e.g., motivated by immediate political considerations rather than long-term economic efficiency) and set an allowed return that it considers to be economically efficient and commensurate with the risks involved in the prevailing market conditions.

Inconsistency with the approach to the risk-free rate

45 In relation to the risk-free rate, Seqwater submitted a figure of 1.84%, being the yield on 3-year Commonwealth Government bonds at the time of the submission. The Draft Report set the risk-free rate to 2.07%, based on updated data available at the time of that report.

46 That is, the Draft Report recognises that the risk-free rate is a time-varying parameter that moves up and down as financial market conditions change. Even though Seqwater submitted a lower figure, the Draft Report adopted a higher figure because that higher figure was commensurate with the prevailing conditions in the market at the time.

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[23] QCA Act (1977), s 168A(a).

47 Regulators, including the QCA, have recognised that the MRP is a time-varying parameter that changes with the prevailing financial market conditions. For example, the Australian Energy Regulator (AER) has stated that:

> Evidence suggests the MRP may vary over time. In their advice to the AER, Professor Lally and Professor Mackenzie and Associate Professor Partington have expressed the view that the MRP likely varies over time.[24]

48 The QCA has also stated that:

> …the market risk premium is forward-looking,[25]

which implies that the MRP changes with market conditions, and specifically that:

> …the market risk premium varies over time.[26]

49 Of course, the mere fact that the QCA now considers the MRP to be 7% whereas it was previously 6.5% indicates that it must be a time-varying parameter.

50 Thus, consistency would require that both time-varying parameters (risk-free rate and MRP) should be updated to reflect the prevailing market conditions at the time of the decision.

Asymmetry in allowed returns introduces a bias

51 The Draft Report considers that the best estimate of the MRP that is commensurate with the prevailing market conditions is 7%, but then adopts the lower 6.5% figure on the basis that the lower figure must be adequate if the regulated business submitted it. In our view, there are two problems with this reasoning:

a. As set out above, Seqwater's submission clearly indicated it did *not* consider the 6.5% figure to be adequate; and

b. The approach adopted in the draft decision introduces an asymmetry into the setting of allowed returns.

52 In terms of the asymmetry point, there are two possible perspectives:

a. If the regulator considers that the regulated firm *knows* the true value of a parameter (i.e., the firm knows what return its investors require), whereas the regulator can only produce a noisy estimate, then it would be reasonable for the regulator to adopt the submitted value. But this would apply whether the submitted value was above or below the regulator's estimate. If the regulator always adopted the lower of the submitted value and its own estimate, it would be (statistically) more likely to adopt its

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[24] AER (2013), Rate of Return Guideline: Explanatory Statement, p. 91.

[25] QCA MRP Discussion Paper, p. 9.

[26] QCA Market Parameters Decision, p. 81.

own estimate where that estimate was downwardly mis-estimated, introducing a downward bias; and

b. In the more likely scenario in which the regulator considers that the regulated firm also produces a noisy estimate there are now two noisy estimates to choose between. If the regulator always adopts the lower of two noisy estimates, this will also (statistically) introduce a downward bias.

Incentive for ambit claims

53 If a regulator adopts the approach of:

a. Replacing submitted parameters with lower figures when it considers the submission to be too high; and

b. Retaining submitted parameters when it considers them to be too low,

the obvious incentive is for regulated businesses to always submit inflated parameter estimates.

54 That is the only strategy that ensures that the regulated firm will receive the regulator's best estimate of each parameter. Otherwise, the regulated business may receive an allowance below the regulator's best estimate.

3 Prevailing estimates of the market risk premium

3.1 Current QCA estimates

55 The Draft Report for Seqwater states that the QCA considers the best currently available estimate of the MRP to be 7.0%. The Draft Report contains no information about how that figure was calculated. However, an almost contemporaneous Draft Decision for Aurizon Network[27] sets out the derivation of a 7.0% MRP in that case, which is summarised in Table 1 below.

Table 1: Current QCA MRP estimates

Method	Point estimate	Weight
Ibbotson	6.6%	25%
Siegel	5.9%	15%
Cornell	6.4%	25%
Surveys	7.0%	20%
Wright	9.5%	15%
Weighted average	**7.0%**	

Source: QCA December 2017 UT5 Draft Decision, p. 83.

56 In our view, the 7% figure is conservative in many respects. In a number of areas, the QCA has exercised its discretion in ways that (a) are contrary to standard regulatory and commercial practice, and (b) have the effect of reducing its MRP estimate. This section of the report sets out a number of examples. Our conclusion is that the relevant evidence supports an MRP of at least 7%.

3.2 Relative weights

57 In our view, there are a number of issues relating to the QCA's proposed weighting scheme, all of which tend to reduce the final estimate:

a. **The Siegel approach is unreliable and inappropriate and should not be afforded material weight**.

   As noted in our previous report:[28]

[27] QCA, 2017, Aurizon Network UT5 Draft Decision, December.

[28] Frontier Economics (2017), p. 9.

i. The "Siegel" approach is the QCA's own invention and is not used by regulators, practitioners or academics;

ii. It is unorthodox to revise the historical data by:

1. Identifying which historical events would have been expected by investors at the time, and which would have been unexpected by investors at the time; and

2. Making an adjustment to convert the data into what one considers it would have looked like if the unexpected events had not occurred.

This is because there is no objective standard by which particular historical data periods may be said to be unexpected and therefore in need of "adjustment."

iii. The data required to implement the Siegel approach is not available, requiring strong assumptions to be made; and

iv. The Siegel paper is based on the notion that the high real government bond returns in the 1980s are expected to continue in the future. However, precisely the reverse has occurred.

b. The Ibbotson/Siegel approach receives disproportionate weight relative to the Wright approach

The Ibbotson and Siegel approaches are based on the assumption that the MRP is constant in all market conditions, whereas the Wright approach is based on the assumption that the MRP varies over time indirectly with changes in the risk-free rate.

In its UT5 Draft Decision, the QCA notes that it has attempted to test the Ibbotson/Siegel and Wright assumptions and concludes that there is no significant difference between the two.[29]

However, the QCA applies almost three times as much weight to the Ibbotson/Siegel approach as to the Wright approach. Table 1 above shows that the Ibbotson and Siegel approaches receive a combined weight of 40% and that the Wright approach receives only 15% weight.

3.3 Survey estimates

58 In our view, there are a number of problems with the QCA's survey estimate, all of which tend to reduce that estimate:

a. **Adjustment for imputation credits**

[29] QCA, 2017, UT5 Draft Decision, p. 493.

Every other approach that the QCA uses to estimate the MRP has been adjusted to reflect the QCA's assumed value of imputation credits.[30] That is, all other approaches produce *with-imputation* estimates of the MRP.

The QCA concludes that the survey method produces final estimates of 6.6% without-imputation and 7.4% with-imputation.[31] These two figures are then averaged (producing 7.0%) before being combined with the (exclusively) with-imputation estimates from the other approaches.

In our view, a with-imputation estimate should be used for two reasons:

i. The regulatory framework adopted by the QCA requires a with-imputation estimate of the MRP; and

ii. All of the other approaches produce with-imputation estimates, so the survey estimate should be derived on the same basis for consistency.

b. **Adjustment for the term of the risk-free rate**

In the 2014 Market Parameters Decision, the QCA assumed (reasonably in our view) that survey respondents supply a MRP estimate relative to the long-term (e.g., 10-year) government bond yield.

In the UT5 Draft Decision, the QCA abandons that approach in favour of the assumption that survey participants might supply a MRP estimate relative to the 4-year government bond yield. In this regard, the QCA states that:

> We also hold the view that there is no basis to assume that survey respondents define the MRP relative to the 10-year risk-free rate. Further, some respondents **might even** provide responses to very short-term rates.[32]

In our view, the "might even" approach falls well short of the standard of evidence that the QCA demands from other stakeholders and is not a reliable basis for placing 100% weight on the assumption that all survey responses are made relative to short-term rates.

Moreover, the "short-term" assumption is directly contradicted by the survey evidence itself. The KPMG survey[33] indicates that

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[30] That is, a gamma of 0.46.

[31] QCA, 2017, UT5 Draft Decision, p. 83.

[32] QCA, 2017, UT5 Draft Decision, p. 477, emphasis added.

[33] KPMG, 2017, Valuation practices survey, July, pp. 10-11.

the vast majority of respondents use a 10-year government bond yield or a figure even higher than that. Similarly, the Fernandez survey[34] sets the 10-year government bond yield as the appropriate benchmark and shows that respondents are adopting a risk-free rate even higher than the 10-year yield.

Consequently, the QCA's survey estimate is downwardly biased in that it assumes that responses are relative to a shorter-term risk-free rate when they are clearly relative to a 10-year risk-free rate or even higher figure.

c. **Adjustment for margin to risk-free rate**

As noted in our previous report,[35] Fernandez (2017) documents that survey respondents were adding their 7.8% estimate of the MRP to a risk-free rate of 3% at a time when the 3-year government bond yield was approximately 2%. Thus, it would be wrong to conclude that the Fernandez survey supported an approach whereby the reported MRP was added to the prevailing 3-year government bond yield when that is clearly inconsistent with the survey responses.

Similarly, the KPMG survey reports that:

i. Australia's current low-interest environment has resulted in some valuers adjusting the market risk premium upwards by either 0.5% or 1.0%;[36] and

ii. The vast majority of respondents are currently using risk-free rates that are well above the prevailing 10-year government bond yield.[37] In fact, the KPMG website indicates that, in relation to the 2017 Valuation Practices Survey, the most commonly used risk-free rate was 4.5%.[38]

In summary, the assumption that survey respondents pair their MRP response with the prevailing 3-year government bond yield is inconsistent with the survey evidence itself and results in an a downward bias to the allowed return on equity.

d. **Introduction of the KPMG survey**

In its UT5 Draft Decision, the QCA notes that the Fernandez (2017) survey estimate is based upon 26 responses for Australia

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[34] Fernandez, P., V. Pershin and I.F. Acin, Discount rate (risk-free rate and market risk premium used for 41 countries in 2017: A survey, ssrn.com/abstract=2954142.

[35] Frontier Economics (2017), p. 12.

[36] KPMG, 2017 Valuation Practices Survey, p. 11.

[37] KPMG, 2017 Valuation Practices Survey, p. 10.

[38] https://home.kpmg.com/au/en/home/insights/2017/07/valuation-practices-survey-2017.html.

and expresses concern about that sample size. This leads the QCA to place equal weight on the KPMG (2017) survey. The introduction of the KPMG estimate is explained as follows:

> Therefore, while we have taken the Fernandez et al. 2017 estimate into account, we conclude it should be treated with caution. Accordingly, as a cross-check, we also examined survey results from the most recent KPMG valuation survey (2017), which surveys a number of valuation practitioners. In this survey, the most commonly adopted estimate for the MRP was 6.0 per cent (also the median).[39] We have taken this estimate into account to complement the Fernandez et al. 2017 estimate when computing the survey component of the overall survey estimate.

The Fernandez surveys for 2009,[40] 2010,[41] 2011,[42] and 2012[43] (i.e., prior to the Market Parameters Decision) were based on sample sizes of 23, 21, 40 and 17. Thus, it seems difficult to justify the change in weight afforded to the Fernandez estimate on the basis of sample size.

In his advice to the QCA, Lally (2017) suggests that the Fernandez (2017) figures may be the subject of a computation error, typo or transcription error.[44] The QCA should clearly explain whether it gave any weight to that submission when reducing its reliance on Fernandez.

3.4 Cornell (DGM) estimates

Discretionary downward adjustments

59 In a previous report submitted to the QCA, we set out a number of discretionary adjustments that the QCA makes when constructing its Cornell DGM estimates

[39] The UT5 Draft Decision makes no mention of the fact that there are zero responses less than 6% and a number of responses above 6%, some above 7.5%. It simply adopts 6% as the estimate obtained from that survey.

[40] Fernandez, P & del Campo, J 2009, 'Market Risk Premium Used in 2008 by Professors: A Survey with 1,400 Answers', Working Paper, IESE Business School, University of Navarra, 16 April.

[41] Fernandez, P & del Campo, J 2010, 'Market Risk Premium Used in 2010 by Professors: A Survey with 1,500 Answers', Working Paper, IESE Business School, University of Navarra, 15 May.

[42] Fernandez, P, Aguirreamalloa, J, & Corres, L 2011, 'Market Risk Premium Used in 56 Countries in 2011: A Survey with 6,014 Answers', Working Paper, IESE Business School, University of Navarra, 25 April.

[43] Fernandez, P, Aguirreamalloa, J, & Linares, P 2013, 'Market Risk Premium and Risk Free Rate Used for 51 Countries in 2013: A Survey with 6,237 Answers', Working Paper, IESE Business School, University of Navarra, 26 June.

[44] Lally (2017), p. 20.

of the MRP, explaining why we consider that those special adjustments are unwarranted.[45] The key adjustments are:

a. The QCA makes a reduction of 0.5%, 1.0% and 1.5% to its estimate of long-run GDP growth; and

b. The QCA assumes that investors have two different required returns on equity, an 11.8% required return on all cash flows beyond year 10 and a lower required return on all cash flows before year 10.

60 We have elsewhere set out our detailed reasons for concluding that these adjustments are unwarranted, so we do not repeat them here.[46] However, we note that both of these adjustments have the effect of materially reducing the estimate of the MRP.

61 In addition to those discretionary downward adjustments, there are two more reasons that arise in relation to the QCA's most recent estimates.

The QCA has not updated its long-run mean estimate

62 In its 2014 Market Parameters Decision, the QCA set its assumed long-run required return to 11.8%.[47] This was computed by adding the QCA's assumed long-run MRP of 6% to an assumed long-run 10-year risk-free rate of 5.8%. The latter figure is obtained by:

a. Taking the average yield on inflation-indexed bonds from July 1993 through to October 2013 (when the Market Parameters calculations were performed) of 3.22%; and

b. Increasing for expected inflation of 2.5% using the Fisher relation.

63 In the UT5 Draft Decision, all other elements of the MRP calculation are updated to reflect the most recent data but the 5.8% figure has apparently not been updated.[48] If that figure is updated from October 2013 to the present, the result is a decline to 5.4%.

64 This has the effect of materially reducing the "post 10 years" return, and consequently materially increasing the estimate of the required return over the first 10 years.

65 In summary, the effect of freezing the 5.8% figure at its 2013 level (while all other aspects of the calculation are updated to reflect current data) is to materially reduce the MRP estimate.

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[45] Frontier Economics, 2017, An updated estimate of the market risk premium, September.

[46] Frontier Economics, 2017, An updated estimate of the market risk premium, September.

[47] QCA, 2014, Market Parameters Decision, p. 71.

[48] QCA, 2017, UT5 Draft Decision, pp. 485-486.

The Cornell DGM estimate is computed relative to the 10-year risk-free rate

66 In its UT5 Draft Decision, the QCA sets out to estimate the MRP relative to the 4-year government bond yield. Whereas a 4-year government bond yield is used when implementing the other MRP estimation techniques, the QCA uses the 10-year government bond yield when implementing the Cornell DGM approach.

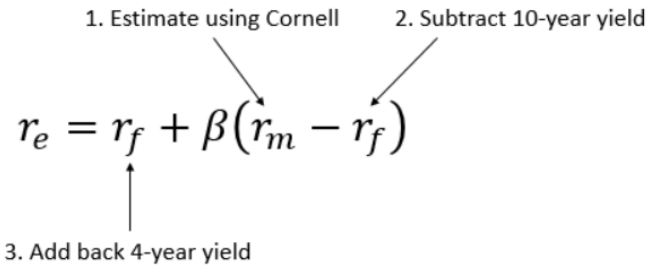
67 The Cornell DGM approach first produces an estimate of the required return on the market. The prevailing risk-free rate is then deducted to produce an estimate of the MRP.

68 If one is seeking to estimate the MRP relative to the 4-year yield, one would simply deduct the prevailing 4-year yield. However, the QCA deducts the prevailing 10-year yield, and treats the resulting figure as an MRP relative to the 4-year yield.

69 In our view, this approach makes little sense – it is not clear why one would deduct the 10-year yield when the objective is to estimate the MRP relative to the 4-year yield.

70 The effect of the inconsistency is made clear when considering how this information is used within the CAPM, as shown in Figure 3 below.

Figure 3: Inconsistency in QCA approach to Cornell MRP estimate



71 In the current market conditions, this inconsistency results in the MRP estimate being biased downwards by more than 0.5%.

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