



AusNet Transmission Group Pty Ltd

Transmission Revenue Review 2017-2022

Revised Revenue Proposal

**Appendix 6B: The market risk premium,
September 2016 (Public)**

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The market risk premium

REPORT PREPARED FOR AGN, MULTINET GAS, AUSNET
TRANSMISSION AND AUSNET GAS

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The market risk premium

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1 Executive summary

1 Frontier Economics has been retained by AGN, Multinet Gas, AusNet Transmission and AusNet Gas to provide our views on the approach to estimating the market risk premium (MRP) for use in the Capital Asset Pricing Model (CAPM).

1.1 Author of report

2 This report has been authored by Professor Stephen Gray, Professor of Finance at the UQ Business School, University of Queensland and Director of Frontier Economics, a specialist economics and corporate finance consultancy. I have Honours degrees in Commerce and Law from the University of Queensland and a PhD in Financial Economics from Stanford University. I teach graduate level courses with a focus on cost of capital issues, I have published widely in high-level academic journals, and I have more than 15 years' experience advising regulators, government agencies and regulated businesses on cost of capital issues. I have published several papers on various aspects of the estimation of the weighted-average cost of capital. A copy of my curriculum vitae is attached as an appendix to this report.

3 My opinions set out in this report are based on the specialist knowledge acquired from my training and experience set out above. I have been provided with a copy of the Federal Court's Practice Note CM 7, entitled "Expert Witnesses in Proceedings in the Federal Court of Australia", which comprises the guidelines for expert witnesses in the Federal Court of Australia (Expert Witness Guidelines). I have read, understood and complied with the Expert Witness Guidelines.

1.2 Primary conclusions

4 Our primary conclusions are set out below.

The regulatory task

5 The MRP varies over time and that the regulatory task is to adopt a forward-looking estimate of the MRP that is commensurate with the prevailing conditions in the market for equity funds.

The Guideline approach

6 The approach to estimating the MRP that is set out in the AER's Rate of Return Guideline is to give:

- a. Greatest¹ consideration to the long-run mean of historical excess returns;

¹ AER Rate of Return Guideline, Explanatory Statement, p. 95.

- b. Significant² consideration to its DGM estimates; and
- c. Some³ or limited⁴ consideration to other evidence including surveys, independent expert reports, conditioning variables, and other regulators' allowances.

7 The Guideline approach to setting the MRP allowance involves two steps:

- a. Set a range based on the aggregated ranges of its historical excess returns and DGM estimates; and
- b. Select a point estimate from within that range.

8 In its Guideline, the AER set the allowed MRP to 6.5% on the basis that:

This point estimate lies between the historical average range and the range of estimates produced by the DGM. This reflects our consideration of the strengths and limitations of each source of evidence.⁵

How the Guideline approach achieves the regulatory task

9 The historical excess returns approach estimates the MRP by taking the mean excess return over a long historical period. Self-evidently, this estimate must reflect the average market conditions over the historical period that was used. Logically, this approach can only produce a forward-looking estimate that is commensurate with the prevailing conditions in the market in two circumstances:

- a. Investors always require the same MRP in all market conditions; or
- b. The current market conditions are the same as the average market conditions over the historical period.⁶

10 Neither of these conditions is likely to hold. The AER has stated that it does not consider that the MRP is the same in all market conditions, and the current conditions are quite unlike the average historical conditions in that the current government bond yield (to which the MRP is added to produce the allowed return on equity) is at historical lows.

11 By contrast, there is broad agreement that the DGM method does produce a forward-looking MRP that is commensurate with the prevailing conditions in the market for equity funds. The AER has stated that:

² AER Rate of Return Guideline, Explanatory Statement, p. 97.

³ AER Rate of Return Guideline, Explanatory Statement, p. 97.

⁴ AER Rate of Return Guideline, Explanatory Statement, p. 97.

⁵ AER Rate of Return Guideline, Explanatory Statement, p. 97.

⁶ The point we are making here is that one of these two conditions must hold for the historical mean estimate to also be a forward-looking estimate that is commensurate with the prevailing conditions. A different argument is that the historical mean estimate might still be given some weight, even though it is not a forward-looking estimate, because the forward-looking estimates that are available are not sufficiently reliable to be relied on exclusively.

...we consider DGM estimates have strong theoretical grounding and are more likely to reflect prevailing market conditions than other approaches.⁷

12 Indeed, the AER itself distinguishes between its historical MRP estimates on the one hand and its forward-looking DGM estimates on the other:

...we used results from both forward looking methods and historical averaging of excess returns for estimating the MRP and the results from forward looking methods unambiguously constitute estimates of the prevailing rather than the long-term average value for the MRP.⁸

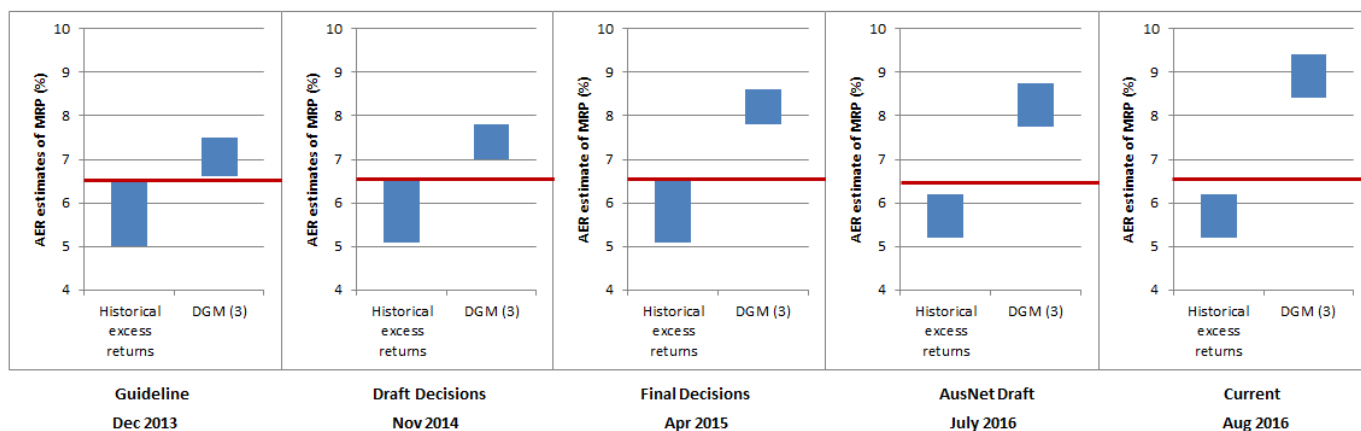
13 The AER goes on to conclude that the only reason that there is any need to rely on mean historical excess return estimates is due to concerns about relying exclusively on the forward-looking DGM estimate:

If a perfectly reliable estimate of the MRP could be generated from market prices it would be reasonable to use this estimate. However, no such estimate exists.⁹

The evolution of the AER's evidence

14 The evolution of the AER's primary MRP estimates and the AER's MRP allowance is summarised in Figure 1 below.

Figure 1: The AER's primary MRP estimates



Source: Rate of Return Guideline; Ausgrid Draft Decision; Ausgrid Final Decision; AusNet Draft Decision; Current estimate using risk-free rate of 1.9%.

15 By construction, the historical excess returns estimate is effectively constant over time and is independent of the prevailing conditions in the market. However, the AER's DGM estimates of the MRP have increased materially since the Guideline and are currently higher than at any time since the Guideline. Although the AER has recently stated that there is no reason to decrease the weight applied to its DGM evidence,¹⁰ the allowed MRP has remained fixed at 6.5%, even as the DGM evidence has become more and more inconsistent with that figure.

⁷ AER (2013), Rate of Return Guideline: Explanatory Statement, Appendices, p. 85.

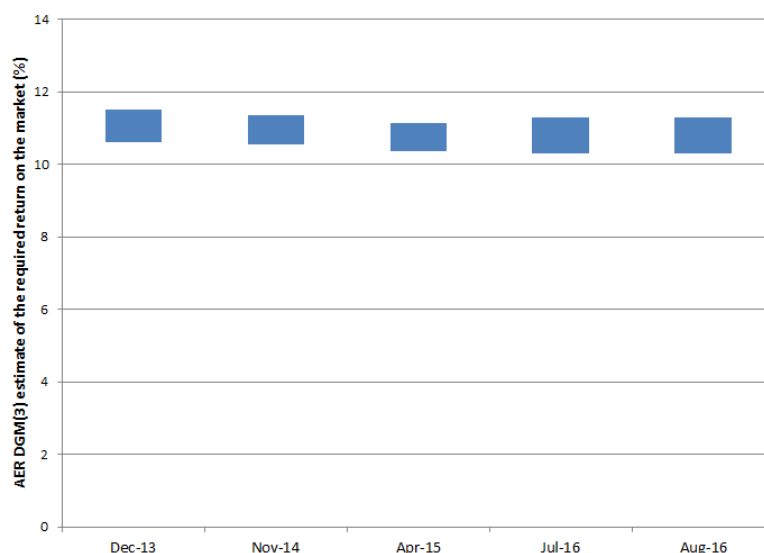
⁸ AER (2013), Rate of Return Guideline: Explanatory Statement, Appendices, p. 103.

⁹ AER (2013), Rate of Return Guideline: Explanatory Statement, Appendices, p. 110.

¹⁰ AusNet Draft Decision, Attachment 3, p. 207.

- 16 The reason for the increase in the AER's DGM estimate of the MRP is that the evidence suggests that the overall required return on equity has remained remarkably stable since the Guideline, even as government bond yields have fallen sharply. This is illustrated in Figure 2 below.

Figure 2: AER three-stage DGM estimates of the required return on the market



Source: AER Rate of Return Guideline; AER Ausgrid Draft Decision; AER Ausgrid Final Decision; AER AusNet Draft Decision; Frontier Economics updated calculations.

The reduction in weight applied to the DGM evidence

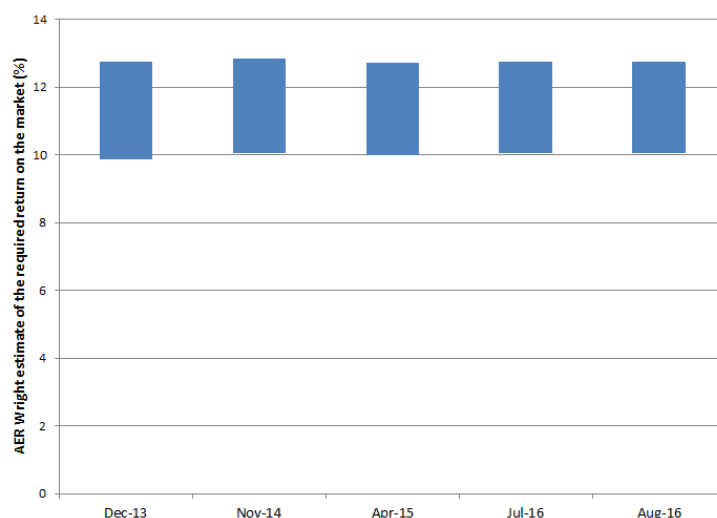
- 17 Figure 1 shows that, since the publication of its Guideline, the AER has reduced the weight that it has applied to its own DGM estimates of the MRP. The AER's DGM estimates of the MRP have increased substantially because:
- As shown in Figure 2, the DGM approach estimates that the forward-looking required return on the market has remained stable since the Guideline; and
 - Government bond yields have fallen materially since the Guideline; and
 - The MRP is estimated by subtracting the government bond yield from the forward-looking estimate of the required return on equity.

- 18 It is difficult to reconcile the fact that the AER has maintained the same MRP allowance even as its DGM estimates have increased materially. It seems that the AER has reduced the relative weight that it applies to its own DGM estimates as they have become more and more inconsistent with its 6.5% allowance.

Other evidence considered by the AER

- 19 The AER also reports that its Wright estimates of the required return on the market have remained stable since the Guideline, as summarised in Figure 3 below.

Figure 3: AER Wright estimates of the required return on the market



Source: AER Rate of Return Guideline; AER Ausgrid Draft Decision; AER Ausgrid Final Decision; AER AusNet Draft Decision; Frontier Economics updated calculations.

20 The other evidence that receives some or limited consideration by the AER is also generally consistent with the notion that the required return on equity has remained quite stable since the Guideline even as government bond yields have fallen, thus implying a higher MRP. For example:¹¹

- a. Other regulators are currently adopting higher MRP estimates;
- b. Independent experts are currently adopting higher MRP estimates; and
- c. Conditioning variables are generally consistent with a stable required return on equity and a higher MRP.

Views from the market

21 Evidence from a range of respected market participants is consistent with the weight of evidence set out above – that the required return on equity has remained relatively stable even as government bond yields have fallen. This position is supported by:

- 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;
- c. Corporate advisory firms such as McKinsey and NERA-US; and
- d. Independent expert firms such as EY, KPMG, Deloitte, and Lonergan Edwards.

¹¹ See Section 4.5 below.

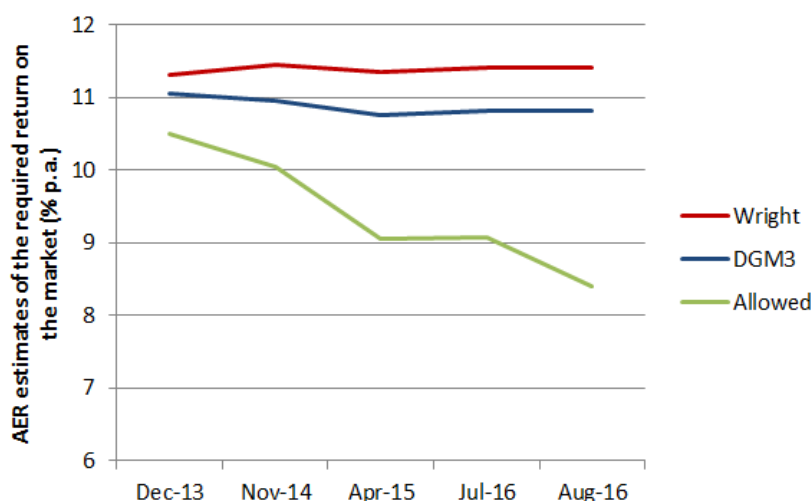
Implications of the AER's approach

22 Since its 2013 Guideline, the AER has allowed an MRP of 6.5% in every one of its draft and final decisions. The AER's advisors note that this approach results in the allowed return on equity moving one-for-one with changes in risk-free rates:

The AER decisions hold the risk premium nearly constant (although upward adjustments of 0.5% have been made). As (sic) result the regulated return tends to fall 1 for 1 with falls in the risk free rate.¹²

23 The inevitable consequence of setting a nearly constant MRP is that the allowed return on equity falls one-for-one with falls in government bond yields. Since government bond yields have fallen sharply since the Guideline, the AER's allowed return on equity has also fallen correspondingly. This occurs in spite of the evidence set out above – including the AER's own DGM estimates – that the required return on equity has remained remarkably stable since the Guideline. The distinction between the AER's estimates and its regulatory allowance is summarised in Figure 4 below.

Figure 4: The required return on the market – AER estimates and allowances



Source: Rate of Return Guideline, Explanatory Statement, Appendix; Ausgrid Draft Decision Attachment 3; Ausgrid Final Decision Attachment 3; AusNet Draft Decision Attachment 3.

24 Since its Guideline in December 2013, the yield on 10-year government bonds has fallen from 4.1% to 1.9%.¹³ The AER has maintained the same 6.5% MRP in every one of its decisions since December 2013. Thus, the AER considers that the required return on equity for the average firm¹⁴ has fallen from 10.6%¹⁵

¹² Partington and Satchell (2016), p. 17.

¹³ <http://www.rba.gov.au/statistics/tables/xls/f02hist.xls>.

¹⁴ Which, under the CAPM, is equal to the sum of the risk-free rate and the MRP.

¹⁵ 4.1% + 6.5%.

in December 2013 to 8.4%¹⁶ now. This represents a decline of more than 25% over the last two and a half years.

25 By contrast, as set out above, there is a substantial body of evidence to support the proposition that the required return on equity has **not** fallen by over 25% in the last two and a half years.¹⁷

26 The broader effect of the AER's approach to distilling the MRP evidence into a single regulatory allowance is illustrated in Figure 5. That figure contrasts the AER's allowance for the required return on the market with mid-point estimates from the AER's three-stage DGM.¹⁸

27 The most obvious point of departure is during the global financial crisis (GFC) in late 2008. The AER approach implies that the required return on equity *fell* dramatically during the peak of the GFC – as investors moved funds into government bonds, lowering yields. Such an outcome is obviously implausible – the required return on equity capital does *not* fall materially during financial crises. Of course it is absurd to suggest that equity capital becomes cheaper and more abundant during financial crises. But that is precisely what the AER's approach to setting the MRP suggests. By contrast, the AER's own forward-looking DGM method suggests that the required return on equity increased during the GFC.

Figure 5: The required return on the market – AER mid-point DGM estimates and regulatory allowances



Source: Frontier Economics.

28 Figure 5 also shows that the divergence between the two methods is not confined to the peak of the GFC. For example, throughout 2007 when equity

¹⁶ 1.9% + 6.5%.

¹⁷ See also Section 5 below.

¹⁸ That is, estimates based on the AER's specification and implementation of the DGM with a long-run growth rate of 4.6%.

prices were very high and it is widely accepted that equity capital was relatively cheaper, the AER approach suggests that the cost of equity capital was very high.

29 Importantly, the two approaches currently suggest very different required returns. Whereas the DGM method suggests that the required return on equity has remained quite stable since 2013 (hovering around 11%), the AER allowance suggests a material decline in the cost of equity to the lowest level ever on record.

The problem with a constant MRP allowance

30 The problem with the application of the AER's approach to date is that its decisions imply that the required return on equity **always** falls one-for-one with **every** decline in government bond yields. This fixed relationship between allowed returns and government bond yields leads to implausible estimates in some market conditions, including the current market conditions.

31 In this regard, Partington and Satchell (2016) have recently advised the AER that:

We begin by stating our position that it seems likely that the risk premium changes over time. It is also entirely possible that the risk premium sometimes changes at the same time as interest rates change, but that change may either be in the same direction as the interest rates, or in the opposite direction. At any point in time, there are three possibilities for the market risk premium, it may remain unchanged, it may go down, or it may increase. There is no compelling reason for an interest rate decrease to automatically be associated with an increase in the market risk premium.¹⁹

32 We agree with everything that Partington and Satchell have said in the above paragraph. However, just as there is “no compelling reason for an interest rate decrease to automatically be associated with an increase in the market risk premium,” there is equally no compelling reason for an interest rate decrease to *never* be associated with an increase in the market risk premium.

33 This is the crux of the problem with the AER's nearly constant MRP. Even though government bond yields have halved since the Guideline, and even though there is strong evidence that the real-world required return from equity holders has not fallen one-for-one with those yields, the AER has maintained the same MRP allowance.

34 We do not suggest that the AER should *always* increase the MRP allowance *whenever* the government bond yield falls or that any increase should completely offset the fall in yields. We simply suggest that the AER should *sometimes* increase the MRP allowance to *partially* offset the fall in yields – when objective evidence supports that course of action.

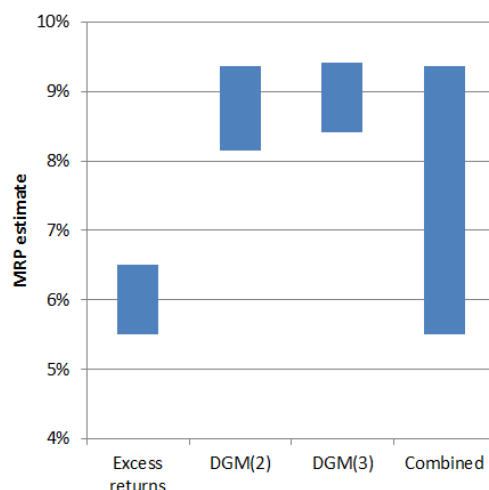
¹⁹ Partington and Satchell (2016), p. 17.

A current estimate of the MRP

35 Consistent with the AER's Guideline approach, we begin by constructing a combined range from the historical excess returns and DGM ranges. This is set out in Figure 6 below, where:

- a. The historical excess returns range is set to 5.5% to 6.5% with a mid-point estimate of 6.0%, as per Figure 6 below; and
- b. The DGM estimate is set by using the AER's most recent DGM estimates of the required return on the market and subtracting the current 10-year government bond yield of 1.9%. The mid-point three-stage DGM estimate is 9.0%.

Figure 6: Current MRP range – AER Guideline approach



Source: Frontier Economics calculations based on estimates set out in the AusNet Draft Decision, Attachment 3.

36 The second step of the AER's Guideline approach is to select a point estimate from within the combined range. In this regard, we note that the AER's Guideline approach is to select a point estimate where:

This point estimate lies between the historical average range and the range of estimates produced by the DGM. This reflects our consideration of the strengths and limitations of each source of evidence.²⁰

37 In its Guideline, the AER adopted a point estimate MRP of 6.5%. The following factors appear to be relevant to the selection of that figure:

- a. The AER's historical excess returns mid-point estimate is 6.0%²¹ and its mid-point three-stage DGM estimate is 7.1%.²² The mid-point of these two estimates is 6.55%;

²⁰ AER Rate of Return Guideline, Explanatory Statement, p. 97.

²¹ AER Rate of Return Guideline, Explanatory Statement, p. 93.

²² The AER has subsequently stated its preference for the three-stage specification of the DGM. See, for example, JGN Draft Decision, Attachment 3, Appendix C, p. 222.

- b. The AER adopted an upper bound of 6.5% from its historical excess returns approach and a lower bound of 6.7% from its three-stage DGM approach. The mid-point of this gap between the two ranges is 6.6%;
- c. The AER's historical excess returns range and two-stage DGM range overlapped in the region of 6.1% to 6.5%. The mid-point of this region of overlap is 6.3%;
- d. The combined range adopted by the AER was 5.0% (the lower bound of the excess returns range) and 7.5% (the upper bound of the DGM range). The mid-point of the combined range is 6.3%; and
- e. If the historical excess returns range is based on arithmetic means, consistent with the AER's subsequent decisions, the combined range is 5.7%²³ to 7.5%, with a mid-point of 6.6%.

38 In summary, the approach to the MRP that is set out in the AER's Rate of Return Guideline is to rely primarily on the historical excess returns method and the DGM method (particularly the three-stage method) to specify a range for the MRP and to select a point estimate from within that range. Other evidence is considered to be "less informative"²⁴ and is given only "some"²⁵ or "limited"²⁶ consideration.

39 In relation to the current estimates set out above, we note that:

- a. The AER stated that its preferred historical excess returns estimate is 6.0%²⁷ and its mid-point three-stage DGM estimate was 9.0%.²⁸ The mid-point of these two estimates is 7.5%;
- b. The upper bound of the AER's historical excess returns approach is 6.5% and the lower bound from the AER's three-stage DGM approach is 8.4%. The mid-point of this gap between the two ranges is 7.5%;
- c. At the time of the Guideline, the AER's historical excess returns range and its two-stage DGM range overlapped. In the current market conditions, the upper bound of the historical excess returns range is 6.5% and the lower bound of the two-stage

²³ AER Rate of Return Guideline, Explanatory Statement, p. 93.

²⁴ AER Rate of Return Guideline, Explanatory Statement, p. 96.

²⁵ AER Rate of Return Guideline, Explanatory Statement, p. 97.

²⁶ AER Rate of Return Guideline, Explanatory Statement, p. 97.

²⁷ AER Rate of Return Guideline, Explanatory Statement, p. 97.

²⁸ The AER has subsequently stated its preference for the three-stage specification of the DGM. See, for example, JGN Draft Decision, Attachment 3, Appendix C, p. 222.

DGM range is 8.2%. The mid-point of the gap between these two ranges is 7.4%; and

- d. The combined range is from 5.5% (the lower bound of the excess returns range) and 9.4% (the upper bound of the DGM range²⁹). The mid-point of the combined range is 7.5%.

40 In summary, we have identified the sorts of considerations that the AER applied when selecting its Guideline MRP of 6.5%. If we apply those same sorts of considerations to the current evidence that the AER has compiled, the result is an estimate of 7.5%.

41 If the MRP is set to 7.5%, the implied market return is 9.4%³⁰ which is still materially below the 10.5%³¹ allowed market return at the time of the Guideline. That is, setting the current MRP to 7.5% implies that the required return on equity has reduced materially since the Guideline, but less than one-for-one with the fall in the risk-free rate.

42 An allowed MRP of 7.5% is an outcome that lies between:

- a. The view that the MRP is constant over all market conditions such that the required return on equity rises and falls one-for-one with changes in the risk-free rate; and
- b. The view that the required return on equity has remained stable over the period since the Guideline.

43 In our view, this is a very conservative estimate in light of the weight of evidence set out above – which supports the notion that the required return on equity has not declined materially since the Guideline.

44 Since the Guideline:

- a. The AER's own DGM estimates indicate that the MRP has increased materially;
- b. The AER's own DGM estimates indicate that the overall required return on equity has remained stable; and
- c. There is substantial other evidence, as set out in Section 5 below, that the overall required return on equity has remained stable.

45 In persisting with a 6.5% MRP (such that its allowed return on equity has been reduced by more than 25% since the Guideline) the AER is apparently applying no weight to any of this evidence. In particular, as the AER's own DGM estimates of the required return on equity have remained stable, it has apparently afforded that evidence progressively less weight – reducing the allowed return by more than 25%.

²⁹ Note that the upper bound is currently the same for the AER's two-stage and three-stage DGM approaches.

³⁰ 1.9% + 7.5%.

³¹ 4.0% + 6.5% = 10.5%.

- 46 The AER's DGM results and other evidence it relies on to estimate the MRP have steadily risen since the Guideline, and these results appear to have been given progressively less weight in regulatory decisions. In our view, this approach is unreasonable – the allowed return on equity should respond to market conditions and should not be set by adding a fixed premium to the contemporaneous government bond yield.
- 47 We have also been asked to consider whether the 7.5% estimate is supported by all of the current evidence that we consider to be relevant. In doing this, our approach is to incorporate all of the evidence that we consider to be relevant to informing the estimate of the MRP, including reducing the theta estimate to 0.35. We conclude that the current evidence, including a theta of 0.35, supports an MRP estimate of at least 7.5%.

2 The regulatory task

48 Within the CAPM, the MRP is a parameter that reflects the additional return, over and above the risk-free return, that investors would require from an investment of average risk.

49 It is well accepted that the MRP varies over time as market conditions change. For example, as market conditions change, investors might reassess the amount of risk that is involved in a particular investment or the return that they require for bearing risk. This is consistent with the fact that regulatory estimates of the debt risk premium have varied materially over the last 10 years – if the return premium for bearing a certain amount of risk varies materially for debt securities, it follows that it must also vary for equity securities.

50 In this regard, the Australian Energy Regulator (AER) stated in its Rate of Return Guideline materials 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.³²

51 In its most recent decisions, the AER states that it seeks to estimate:

...the prevailing market risk premium³³

which is:

...a forward-looking estimate of the risk premium.³⁴

52 The AER also notes that:

The Sharpe-Lintner CAPM is a forward-looking equilibrium asset pricing model and therefore requires forward looking input parameters.³⁵

53 This is consistent with the view set out in the Guideline materials, where the AER stated that its task is to:

...determine an estimate of the 10 year forward looking risk free rate and 10 year forward looking MRP.³⁶

54 In summary, the AER has recognised that the MRP varies over time and that the regulatory task is to adopt a forward-looking estimate of the MRP that is commensurate with the prevailing conditions in the market for equity funds. We agree with this characterisation of the regulatory task.

55 The AER also notes that the market risk premium is the amount by which the required return on the market portfolio exceeds the risk-free rate.³⁷ That is, the

³² AER (2013), Rate of Return Guideline: Explanatory Statement, p. 91.

³³ AusNet Draft Decision, Attachment 3, p. 57.

³⁴ AusNet Draft Decision, Attachment 3, p. 57.

³⁵ AusNet Draft Decision, Attachment 3, p. 188.

³⁶ AER (2013), Rate of Return Guideline: Explanatory Statement, Appendices, p. 108.

³⁷ AusNet Draft Decision, Attachment 3, p. 45.

required return on the market portfolio (which is the same as the required return on equity for a stock of average risk) is computed by adding the MRP estimate to the current risk-free rate:

$$r_m = r_f + MRP .$$

56 The resulting estimate of the required return on the market is then used in the SL-CAPM formula:

$$r_e = r_f + \beta(r_m - r_f).$$

57 That is, the regulatory task is to estimate, for an asset of average risk, the forward-looking required return on equity that is commensurate with the prevailing conditions in the market for equity funds.

58 Consequently, in the remainder of this report we consider the question of how to best estimate the forward-looking required return on equity that is commensurate with the prevailing conditions in the market for equity funds. This is equivalent to considering how to best estimate the forward-looking MRP that is commensurate with the prevailing conditions in the market for equity funds. These are equivalent considerations because the two quantities differ only by the risk-free rate, and there is no controversy about that being set to the contemporaneous yield on 10-year government bonds.

3 The AER's Guideline approach to estimating the MRP

3.1 Methods considered by the AER

59 In its Rate of Return Guideline, and in subsequent decisions, the AER has regard to a number of methods for estimating the MRP. In this section, we begin with an overview of those methods and then consider the process by which the AER distils that evidence into an estimate of the forward-looking MRP that is consistent with the prevailing conditions in the market for equity funds.

Historical excess returns

60 Prior to the 2013 Guideline, the AER set the allowed MRP on the basis of the mean of historical excess returns. This approach involves estimating the excess market return for each year of a long historical period by taking the return on a broad stock market index over the year and subtracting the return that could have been earned on government bonds over that year. The mean excess return over the historical period is then used as an estimate of the average MRP over that period.

61 The mean historical excess return ranges between approximately 6.0% and 6.5% depending on which historical period is considered. Prior to the Guideline, the AER had set the MRP to either 6.0% or 6.5% in all of its decisions.

Dividend growth model (DGM)

62 The DGM involves forecasting future dividends on the market portfolio and then solving for the discount rate that equates the present value of those dividends with current stock prices. This approach provides a direct estimate of the required return on the market portfolio. Subtracting the current risk-free rate then produces an estimate of the MRP.

63 In its Guideline materials, the AER stated that the main change to its approach to estimating the MRP was that it intended to apply more weight to DGM estimates of the MRP. In endorsing the use of DGM estimates, the AER stated that:

- a. DGM estimates “may reflect current market conditions more closely”;³⁸
- b. “DGMs are recognised financial models that are commonly used in practice;”³⁹ and

³⁸ AER Rate of Return Guideline, Explanatory Statement, p. 96.

³⁹ AER Rate of Return Guideline, Explanatory Statement, p. 96.

- c. “DGMs are suited to the estimation of the rate of return from current market information, as demonstrated by US regulators using them for this purpose.”⁴⁰

64 In its Guideline, the AER set out its preferred DGM specification, concluding that:

...we have greater confidence in the symmetry of this information through time and give these estimates greater consideration than we have in the past.⁴¹

Historical real returns (Wright)

65 Another approach for estimating the MRP is what has become known as the “Wright” approach in the Australian regulatory setting. This involves taking the average real return on a broad stock market index over a long historical period and increasing it for expected inflation to obtain an estimate of the required return on the market. Subtracting the current risk-free rate then produces an estimate of the MRP.

66 The AER computes and publishes Wright approach estimates of the MRP, but does not use these estimates to inform its MRP allowance. That is, the AER does not compare its MRP allowance with the Wright estimate of the MRP. Rather, the AER compares:

- a. Its MRP allowance multiplied by its beta estimate of 0.7; with
- b. Its Wright estimate of the MRP multiplied by a beta of 0.4,

and concludes that if the latter is smaller than the former, the Wright evidence will have no impact on its allowed return on equity.⁴²

67 This has the effect of ensuring that the Wright evidence will never have any impact on the allowed return on equity.

Other evidence

68 The AER indicates that it has some limited regard to surveys, although the AER states that it:

...consider[s] this evidence less informative than historical averages and DGM estimates.⁴³

69 The AER also states that independent expert valuation reports “should play a role in our estimation of the expected return on equity,”⁴⁴ cautioning that they must be contemporaneous:

⁴⁰ AER Rate of Return Guideline, Explanatory Statement, p. 96.

⁴¹ AER Rate of Return Guideline, Explanatory Statement, p. 96.

⁴² AusNet Draft Decision, pp. 192-193.

⁴³ AER Rate of Return Guideline, Explanatory Statement, p. 96.

⁴⁴ AER Rate of Return Guideline, Explanatory Statement, Appendices, p. 28.

Expert reports are credible, verifiable, and clearly sourced. Against this, expert reports are not released at regular intervals. Consequently, some estimates may be out of date.⁴⁵

70 The AER also states that it gives “limited consideration”⁴⁶ to conditioning variables and other regulators’ estimates:

We also give some consideration to conditioning variables and other regulators’ MRP estimates. These sources of evidence are subject to various limitations and should be used with caution.⁴⁷

3.2 Distilling the evidence into a single MRP allowance

71 In its Guideline materials, the AER stated that, when setting the allowed MRP, it relies primarily on its historical excess returns and DGM estimates:

...we give greatest consideration to historical averages followed by estimates of the MRP from DGMs and then surveys. We also give some consideration to conditioning variables and other regulators’ estimates of the MRP.⁴⁸

72 The AER further states that it gives:

...significant consideration to DGM estimates of the MRP,⁴⁹

and described its development of a preferred approach for implementing the DGM as:

...the most significant development in this area.⁵⁰

73 The AER also notes that it gives “some”⁵¹ consideration to surveys and “limited”⁵² consideration to other evidence. In this regard, the AER states that:

We also give consideration to survey estimates of the MRP but consider this evidence less informative than historical averages and DGM estimates,⁵³

and:

We also give some consideration to conditioning variables and other regulators’ MRP estimates. These sources of evidence are subject to various limitations and should be used with caution.⁵⁴

⁴⁵ AER Rate of Return Guideline, Explanatory Statement, Appendices, p. 28.

⁴⁶ AER Rate of Return Guideline, Explanatory Statement, p. 97.

⁴⁷ AER Rate of Return Guideline, Explanatory Statement, p. 97.

⁴⁸ AER Rate of Return Guideline, Explanatory Statement, p. 95.

⁴⁹ AER Rate of Return Guideline, Explanatory Statement, p. 97.

⁵⁰ AER Rate of Return Guideline, Explanatory Statement, Appendices, p. 89.

⁵¹ AER Rate of Return Guideline, Explanatory Statement, p. 97.

⁵² AER Rate of Return Guideline, Explanatory Statement, p. 97.

⁵³ AER Rate of Return Guideline, Explanatory Statement, p. 96.

⁵⁴ AER Rate of Return Guideline, Explanatory Statement, p. 97.

74 Thus, when setting the allowed MRP, the AER relies primarily on its historical excess returns and DGM estimates.

75 The AER begins by setting a range for the MRP:

The AER proposes to estimate a range for the MRP, and then select a point estimate from within that range.⁵⁵

76 The AER's MRP range is the aggregation of ranges from the historical excess returns and DGM methods. In its Guideline materials, the AER concludes that:

- a. The historical excess returns method supports a range of 5.0% to 6.5%;⁵⁶ and
- b. The DGM method supports a range of 6.1% to 7.5%.⁵⁷

77 The AER then combines these two ranges into a single combined range of 5.0% to 7.5%.⁵⁸

78 We summarise the AER's Guideline approach to setting the MRP in Figure 7 below. The AER computes DGM estimates using a two-stage specification and a three-stage specification, but has concluded that:

...a three stage DGM is conceptually better than a two stage DGM⁵⁹

and that:

We use a three stage model because we consider the three stage model more plausible. This is because we expect it to take some time for the short term growth in dividends to transition to the long term growth.

In addition to the three stage model, we also consider a two stage model...given the way the short term growth rate is calculated, the two stage model should be used as a cross check.⁶⁰

79 Consequently, we show the full range of the AER's DGM estimates as well as the range from the three-stage specification.

⁵⁵ AER Rate of Return Guideline, p. 16.

⁵⁶ AER Rate of Return Guideline, Explanatory Statement, p. 95.

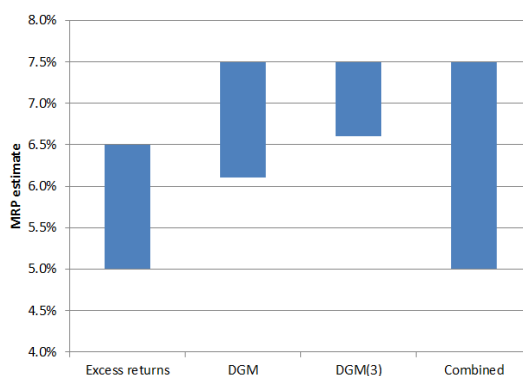
⁵⁷ AER Rate of Return Guideline, Explanatory Statement, p. 97.

⁵⁸ AER Rate of Return Guideline, Explanatory Statement, p. 97.

⁵⁹ JGN Draft Decision, Attachment 3, Appendix C, p. 222.

⁶⁰ JGN Draft Decision, Attachment 3, Appendix C, p. 222.

Figure 7: AER Guideline MRP ranges



Source: AER Rate of Return Guideline, December 2013.

80 In its Guideline materials, the AER set the allowed MRP to 6.5%. In selecting this figure, the AER noted that there was some overlap between the historical excess returns and DGM ranges at 6.5%:

We consider an MRP estimate of 6.5 per cent provides an appropriate balance between the various sources of evidence. This point estimate lies between the historical average range and the range of estimates produced by the DGM. This reflects our consideration of the strengths and limitations of each source of evidence.⁶¹

81 Moreover, the AER stated that its preferred historical excess returns estimate is 6.0%⁶² and has since stated that its preferred approach to the DGM is the three-stage specification,⁶³ which has a mid-point estimate of 7.1%. The final MRP allowance of 6.5% is approximately the mid-point between these two point estimates.

82 In summary, the approach to the MRP that is set out in the AER's Rate of Return Guideline is to rely primarily on the historical excess returns method and the DGM method (particularly the three-stage method) to specify a range for the MRP and to select a point estimate from within that range. Other evidence is considered to be "less informative"⁶⁴ and is given "some"⁶⁵ or "limited"⁶⁶ consideration.

3.3 A forward-looking estimate that is commensurate with the prevailing conditions

83 As set out in Section 2 above, there is broad agreement that the regulatory task is to estimate a forward-looking MRP that is commensurate with the prevailing

⁶¹ AER Rate of Return Guideline, Explanatory Statement, p. 97.

⁶² AER Rate of Return Guideline, Explanatory Statement, p. 97.

⁶³ JGN Draft Decision, Attachment 3, Appendix C, p. 222.

⁶⁴ AER Rate of Return Guideline, Explanatory Statement, p. 96.

⁶⁵ AER Rate of Return Guideline, Explanatory Statement, p. 97.

⁶⁶ AER Rate of Return Guideline, Explanatory Statement, p. 97.

conditions in the market for equity funds. In this section, we consider how the historical excess returns and DGM methods are able to contribute to this regulatory task.

84 We begin by noting that there is broad agreement that the DGM method does produce a forward-looking MRP that is commensurate with the prevailing conditions in the market for equity funds. In this regard, the AER states that:

The DGM method is a theoretically sound estimation method for the MRP. As DGM estimates incorporate prevailing market prices, they are more likely to reflect prevailing market conditions. DGM estimates are also clearly forward looking as they estimate expectations of future cash flows and equate them with current market prices through the discount rate.⁶⁷

and:

...we consider DGM estimates have strong theoretical grounding and are more likely to reflect prevailing market conditions than other approaches.⁶⁸

85 The historical excess returns approach estimates the MRP by taking the mean excess return over a long historical period. Self-evidently, this estimate must reflect the average market conditions over the historical period that was used. Logically, this approach can only produce a forward-looking estimate that is commensurate with the prevailing conditions in the market in two circumstances:

- a. Investors always require the same MRP in all market conditions; or
- b. The current market conditions are the same as the average market conditions over the historical period.

86 In relation to the conjecture that investors always require the same MRP in all market conditions, the AER notes that:

Although the [historical excess returns] estimate changes slowly over time, we consider it is likely to reflect prevailing market conditions if investor expectations are guided by historical excess returns.⁶⁹

87 However, the prospect that investors always require the same risk premium in all market conditions is inconsistent with the generally accepted view that risk premiums are higher during recessions and financial crises and lower during economic expansions. It is also inconsistent with the AER's own view that the MRP likely varies over time⁷⁰ and with the following advice from the AER's consultant:

...the AER believes that the historic average of excess returns may be used by investors to estimate the future MRP and therefore would be a forward-looking

⁶⁷ AER (2013), Rate of Return Guideline: Explanatory Statement, Appendices, p. 84.

⁶⁸ AER (2013), Rate of Return Guideline: Explanatory Statement, Appendices, p. 85.

⁶⁹ AER (2013), Rate of Return Guideline: Explanatory Statement, Appendices, p. 78.

⁷⁰ AER (2013), Rate of Return Guideline: Explanatory Statement, p. 91.

methodology if investors acted in this way. Whether investors act in this way is debatable.⁷¹

88 The alternative motivation for the use of mean historical excess returns is that the current market conditions are the same as the average market conditions over the historical period. However, the prevailing market conditions are very different from the average historical conditions in that the yield on government bonds is lower than at any time in history. The current yield on 10-year government bonds is 1.8% whereas the average yields over the various historical periods that the AER considers are several times greater than this, as set out in Table 1 below.

Table 1: Mean historical excess return estimates

Historical period	Mean excess return	Mean government bond yield
1883-2015	6.3%	5.6%
1937-2015	6.0%	6.5%
1958-2015	6.5%	7.6%
1980-2015	6.2%	8.4%
1988-2015	5.6%	6.9%

Source: Frontier calculations.

89 Of course, there are many dimensions to “market conditions” and many variables can be used to provide an indication of whether the prevailing conditions differ from the historical average market conditions. We consider that the 10-year government bond yield is the most directly relevant and important indicator because it is the figure that is added to the MRP estimate to produce the allowed return on equity.

90 Thus, the approach of adding the (effectively constant) mean historical excess return estimate to the prevailing government bond yield currently produces an historically low allowed return on equity – due to the historically low government bond yield. This would only be appropriate if the cost of equity capital really was at historical lows. The evidence that we report in Sections 4 and 0 below, as well as the AER’s own DGM evidence, is inconsistent with the notion that the cost of equity capital is currently at historical lows. Rather, the evidence suggests that the cost of equity capital has been quite stable over recent years, even as government bond yields have fallen materially.

91 Because:

- a. Investors do *not* always require the same MRP in all market conditions; and

⁷¹ Lally, M., 2013, Review of the AER’s Methodology, March, p. 6.

b. The current market conditions are *not* the same as the average market conditions over the historical period,

there is no reason to conclude that the historical excess returns approach would, in the current circumstances, produce a forward-looking MRP that is commensurate with the prevailing conditions in the market for equity funds.

92 Indeed, the AER itself distinguishes between its historical MRP estimates on the one hand and its forward-looking DGM estimates on the other:

Rather, we used results from both forward looking methods and historical averaging of excess returns for estimating the MRP and the results from forward looking methods unambiguously constitute estimates of the prevailing rather than the long-term average value for the MRP.⁷²

93 The AER goes on to conclude that the only reason that there is any need to rely on mean historical excess return estimates is due to concerns about relying exclusively on the forward-looking DGM estimate:

If a perfectly reliable estimate of the MRP could be generated from market prices it would be reasonable to use this estimate. However, no such estimate exists.⁷³

⁷² AER (2013), Rate of Return Guideline, Explanatory Statement, Appendices, p. 103.

⁷³ AER (2013), Rate of Return Guideline, Explanatory Statement, Appendices, p. 110.

4 The evolution of the evidence on which the AER relies

4.1 The evolution of the AER's range of estimates

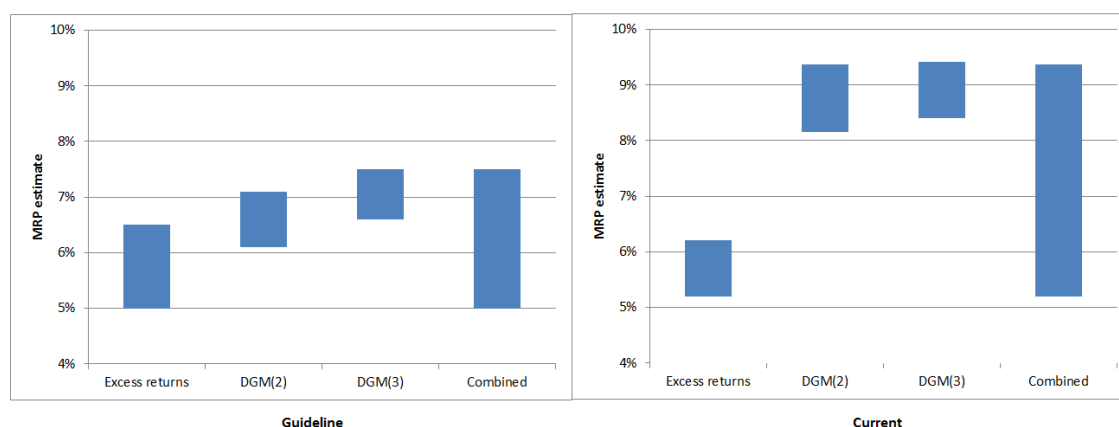
94 In this section, we show that the evidence on which the AER relies has changed materially since the publication of the Guideline in 2013. However, the AER has maintained the same MRP allowance of 6.5% in every decision since the Guideline.

95 As set out in Section 3 above, the AER's Guideline approach to the MRP is to form a range based on the combined range of its historical excess returns and DGM estimates. The resulting ranges from the evidence at the time of the Guideline and the current evidence are set out in Figure 8 below.

96 Clearly, the evidence has changed materially since the time of the Guideline. The estimates from the AER's forward-looking DGM specifications have increased substantially, so the top end of the combined range is now materially higher than at the time of the Guideline.

97 Whereas the Guideline and subsequent AER decisions specified a range of 5.0% to 6.5% for the historical excess returns estimates, the AER's recent decisions no longer specify a range. Rather, the AER states that its "range for historical returns is based on arithmetic averages." The arithmetic averages that the AER reports in its recent decisions range between 5.2% and 6.2%, depending on which historical period is considered.⁷⁴ This is the range that we have displayed in Figure 8 below.

Figure 8: AER MRP ranges

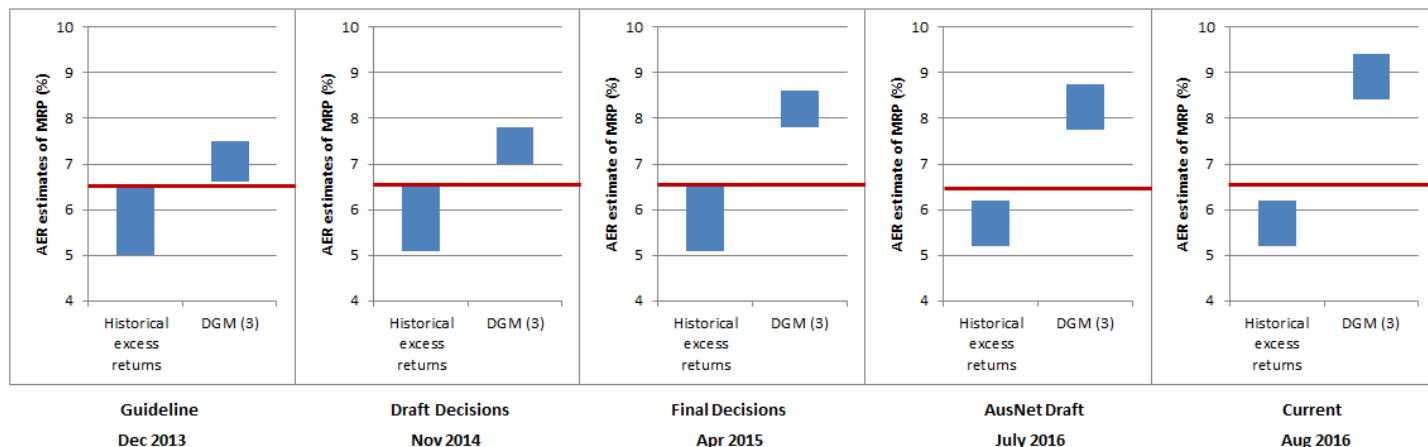


Source: AER Rate of Return Guideline, December 2013; AusNet Draft Decision; Current estimate using risk-free rate of 1.9%.

⁷⁴ AusNet Draft Decision, Attachment 3, Table 3-22, p. 191 to 192. However, these estimates are lower than our own updates and those of the ERA, possibly due to the AER's use of a price index instead of an accumulation index when updating estimates over the last two years.

98 We summarise the evolution of the AER's primary MRP estimates and the AER's MRP allowance in Figure 9 below.

Figure 9: The AER's primary MRP estimates



Source: Rate of Return Guideline; Ausgrid Draft Decision; Ausgrid Final Decision; AusNet Draft Decision; Current estimate using risk-free rate of 1.9%.

99 Figure 9 shows that:

- The AER's historical excess returns estimate has not changed materially since the Guideline;⁷⁵
- The AER's DGM estimates of the MRP have increased materially since the Guideline and are currently higher than at any time since the Guideline; and
- The AER's allowed MRP (the red line in the figure) has remained constant since the Guideline.

100 That is, Figure 9 shows that the AER's DGM estimates appear to have little or no impact on the AER's MRP allowance – the AER's DGM estimates have increased materially, but this has had no impact on the AER's MRP allowance.

101 We note that, in its recent final decisions, the AER has stated that it has not departed from its Guideline approach to the MRP⁷⁶ and that:

We have not changed the weight we apply to the dividend growth model.⁷⁷

102 That is, the AER's approach to processing the relevant evidence and the weight that it applies to the DGM evidence has not changed since the Guideline. This can only be reconciled with the evidence in Figure 9 above if the DGM evidence plays only a minor role in determining the allowed MRP, with the vast majority

⁷⁵ We consider this source of evidence in more detail in Section 4.2 below.

⁷⁶ AusNet Draft Decision, Attachment 3, p. 61.

⁷⁷ AusNet Draft Decision, Attachment 3, p. 207.

of weight being applied to historical excess returns.⁷⁸ Although the AER's own DGM estimates have diverged materially since the Guideline, its MRP allowance remains anchored to the historical excess returns estimate.

103 In summary, the AER's MRP allowance appears to be based almost exclusively on the historical excess returns estimate – which, by its nature, is guaranteed to remain very stable over time and is independent of the prevailing market conditions. If material weight is assigned only to methods that produce essentially constant estimates over time, it is impossible for there to be any result other than a constant allowed MRP.

104 This contrasts with the regulatory task of estimating a forward-looking MRP that is commensurate with the prevailing conditions in the market for equity funds. The AER's DGM estimates suggest that the forward-looking MRP that is commensurate with the prevailing conditions has increased materially since the Guideline, but the AER's MRP allowance has remained fixed.

105 In the remainder of this section, we summarise the evolution of the MRP estimates from each of the methods that the AER set out in its Guideline. In general, we report that:

- a. The long-run mean of historical excess returns has remained stable due to its nature as a long-run mean; and
- b. The other evidence suggests that since the Guideline, the overall required return on equity has remained quite stable even as government bond yields have fallen – implying that the MRP has increased.

4.2 The AER's historical excess returns estimates

106 In its Rate of Return Guideline, the AER set out estimates of the arithmetic and geometric mean of excess returns over various historical periods.⁷⁹ The AER concluded that the mean historical excess returns supported an MRP range of 5.0% to 6.5%.

107 The top of that range was set slightly above the highest arithmetic mean estimate, presumably in recognition of the fact that no mean estimate is perfectly precise, but has a statistical confidence interval around it.⁸⁰

108 The bottom of that range was set to 20 basis points above the highest geometric mean estimate due to concerns about the geometric estimate:

⁷⁸ We have previously submitted that the AER appears to use the DGM for no purpose other than selecting a point estimate at the top of its primary range based on historical excess returns. However, the AER has stated that it does not use its DGM evidence in this way. See, for example, Ausgrid Final Decision, Attachment 3, pp. 368-369.

⁷⁹ AER Rate of Return Guideline, Explanatory Statement, Appendices, Table D.2, p. 83.

⁸⁰ This is not to say that the 6.5% figure is based formally on any confidence interval. Given the high volatility in annual excess returns, the standard error of the mean estimates is large and statistical confidence intervals are very wide.

...there are concerns with using the geometric mean as a forward looking estimate. Therefore, we consider a reasonable estimate of the lower bound will be above the geometric average. However, we give some weight to geometric mean estimates. Therefore, we consider a lower bound estimate of 5.0 per cent appropriate.⁸¹

109 In its November 2014 draft decisions and its April 2015 final decisions, the AER followed the Guideline in setting the top of the range to 6.5% and the bottom of the range to 20 basis points above the highest geometric mean:

Consistent with the approach in the Guideline, we set the bottom of the range as 20 basis points above the highest estimate from the range of geometric averages.⁸²

110 In its May 2016 final decisions, the AER appeared to change its approach to reporting the evidence from historical excess returns:

Historical excess returns provide our baseline estimate and indicates a market risk premium of approximately 5.5 to 6.0 per cent from a range of 4.8 per cent to 6.0 per cent. We consider both geometric and arithmetic averages of historical returns. However, we consider there may be evidence of bias in the geometric averages. Therefore, our range for historical returns is based on arithmetic averages.⁸³

111 The AER has adopted the same approach in its July 2016 draft decisions.⁸⁴

112 Having concluded that there may be evidence of bias in the geometric averages, the AER states that its “range for historical returns is based on arithmetic averages.”⁸⁵ The arithmetic averages that the AER reports range between 5.2% and 6.2%, depending on which historical period is considered.⁸⁶ This is the range that we have displayed in Figure 9 above.

113 In its recent final decisions, the AER reports three different ranges for historical excess returns:

- a. 5.5% to 6.0%;⁸⁷
- b. 4.8% to 6.0%;⁸⁸ and
- c. 4.8% to 6.2%.⁸⁹

114 The 4.8% figure is a geometric mean estimate and is therefore irrelevant to a range that “is based on arithmetic averages.” In our view, a range of 5.5% to

⁸¹ AER Rate of Return Guideline, Explanatory Statement, p. 93.

⁸² Ausgrid Draft Decision, Attachment 3, p. 193; Ausgrid Final Decision, Attachment 3, p. 115.

⁸³ AusNet Draft Decision, Attachment 3, p. 59.

⁸⁴ AusNet Draft Decision, Attachment 3, p. 59.

⁸⁵ AusNet Draft Decision, Attachment 3, p. 59.

⁸⁶ AusNet Draft Decision, Attachment 3, Table 3-22, p. 191 to 192.

⁸⁷ AusNet Draft Decision, Attachment 3, p. 59.

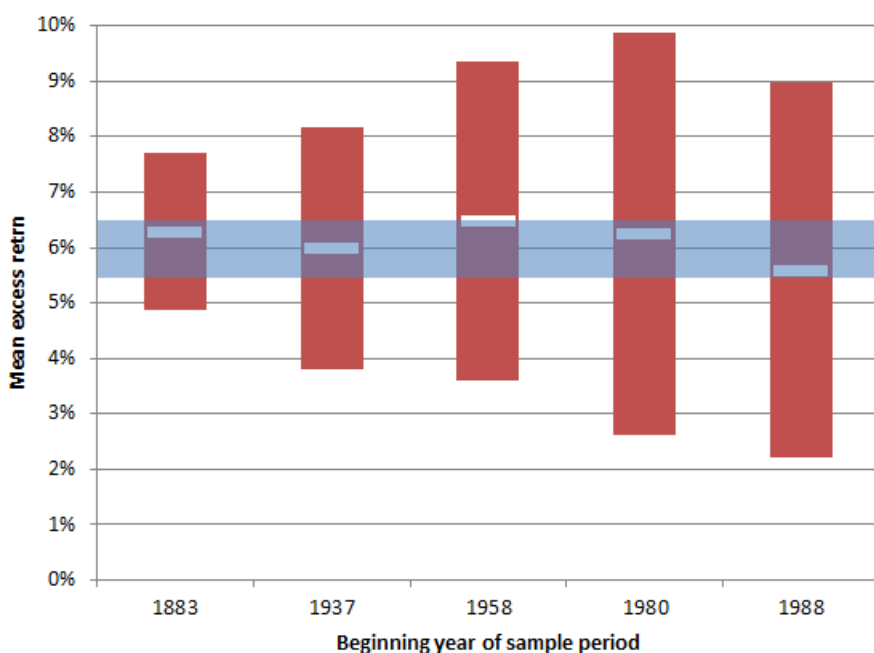
⁸⁸ AusNet Draft Decision, Attachment 3, p. 59.

⁸⁹ AusNet Draft Decision, Attachment 3, Figure 3-3, p. 58.

6.0% is not an accurate characterisation of the AER's arithmetic mean estimates. Two of the five arithmetic mean estimates reported by the AER are above 6.0% and four of the five are above 5.7%. The lowest estimate is for the shortest period, so is the least precise and the most volatile estimate. For example, the AER's estimate of the historical excess return from 1988 has varied between 5.2% and 5.9% since the Guideline. Moreover, the standard error of a mean estimate is proportional to the square root of the number of observations – so the standard error is relatively large and the confidence interval is relatively wide if the number of observations is small. In this regard, our estimate of the standard 95% confidence interval for the estimate from this short period is from -1.2% to 12.3%. That is, the period is so small that the estimate from it is statistically uninformative.

115 Moreover, we have been unable to replicate the AER's historical excess returns estimates. Our estimates are slightly higher than the AER's estimates and are consistent with the estimates recently computed by the ERA for the corresponding time periods.^{90 91} In our view, a more accurate characterisation of the arithmetic mean point estimates is a range of 5.5% to 6.5%. We summarise our point estimates and a one standard error band and our proposed range in Figure 10 below.

Figure 10: Proposed range of historical excess returns estimates



Source: Frontier Economics calculations.

⁹⁰ The ERA ultimately reports an MRP relative to the five-year risk-free rate and gives equal weight to the BHM and NERA historical stock return series. One step of its process is to compute the MRP relative to the 10-year risk-free rate using the BHM data. It is those numbers that we have compared with our own to ensure a like with like comparison.

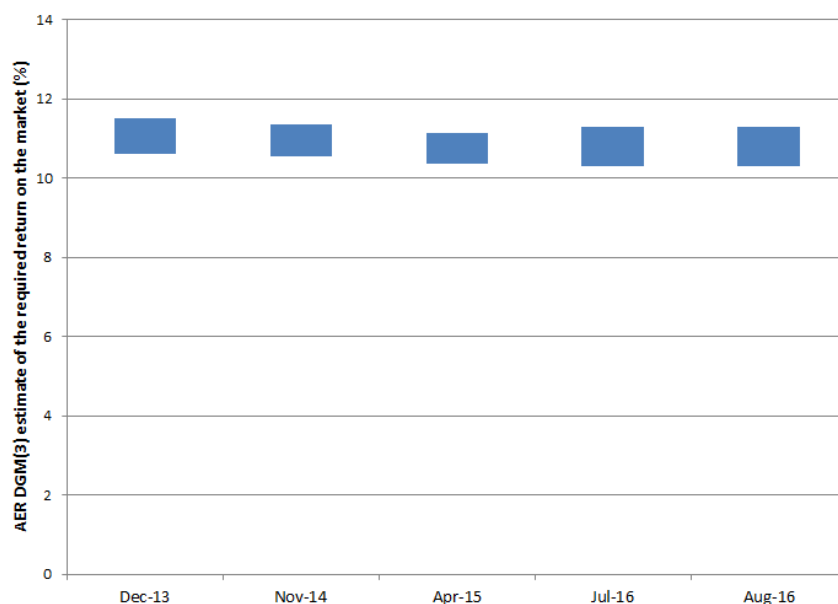
⁹¹ The difference is possibly due to the AER's updates being based on a price index rather than an appropriate accumulation index.

4.3 The AER's DGM estimates

116 The evolution of the AER's DGM estimates of the MRP is summarised in Figure 9 above. It is clear that these estimates have increased materially since the Guideline.

117 The reason for the increase in these estimates of the MRP is that the overall required return on equity has remained stable while the government bond yield has fallen materially. Figure 11 below shows that the AER's own DGM estimates of the required return on equity have not changed between the Guideline in December 2013 and the AER's recent May 2016 decisions, and remain the same when applied to current data. Since an ever decreasing government bond yield is being subtracted from a stable estimate of the required return on equity, the result is an increasing estimate of the MRP.

Figure 11: AER three-stage DGM estimates of the required return on the market

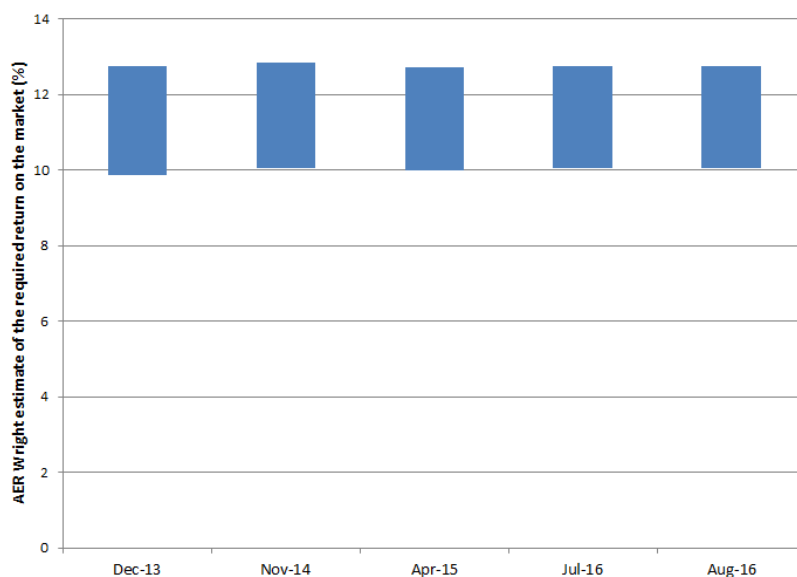


Source: AER Rate of Return Guideline; AER Ausgrid Draft Decision; AER Ausgrid Final Decision; AER AusNet Draft Decision; Frontier Economics updated calculations.

4.4 The AER's Wright estimates

118 The AER reports that its Wright estimates of the required return on the market have remained stable since the Guideline, as summarised in Figure 12 below.

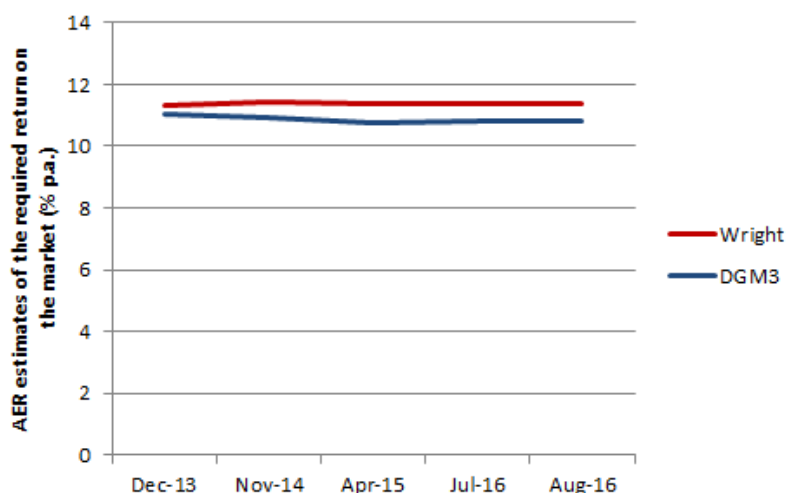
Figure 12: AER Wright estimates of the required return on the market



Source: AER Rate of Return Guideline; AER Ausgrid Draft Decision; AER Ausgrid Final Decision; AER AusNet Draft Decision; Frontier Economics updated calculations.

119 This is consistent with the AER’s DGM estimates above. Since the Guideline, the AER’s mid-point estimates of the required return on the market have remained remarkably constant, as summarised in Figure 13 below.

Figure 13: The AER’s DGM and Wright estimates of the required return on the market



Source: Rate of Return Guideline, Explanatory Statement, Appendix; Ausgrid Draft Decision Attachment 3; Ausgrid Final Decision Attachment 3; AusNet Draft Decision Attachment 3.

4.5 Other considerations

120 Whereas the AER has regard to a number of other considerations when setting its MRP allowance, none of these have led the AER to make any adjustment to its preliminary estimate that is based primarily on historical excess returns. The fact that the other considerations do not have any material influence serves to reinforce the stability in the MRP allowance. In this section, we analyse updated data in relation to items that the AER has considered in its recent decisions.

Regulatory determinations

121 When determining its MRP allowance, the AER has some regard to MRP allowances from other regulators.⁹² Table 2 below sets out recent allowances from a number of regulators.

Table 2: Other regulator's MRP allowances

Regulator	Determination	Date	MRP allowance	Details
ERA	ATCO Gas Final Decision	06/2015	7.6%	5.5 to 8.9% historical returns (excess returns and Wright approach). 5.6% to 9.7% DGM.
	DBP Final Decision	06/2016	7.4%	5.4 to 8.5% historical returns (excess returns and Wright approach). 7.6% to 8.8% DGM.
IPART	Semi-annual WACC Update	02/2016	7.3%	6.0% historical average. 8.5% prevailing conditions. IPART adds its MRP estimate to a risk-free rate that is 90 basis points above the prevailing government bond yield.
ESC	Goulburn-Murray Water Draft Determination	02/2016	6.0%	Not a current market estimate; taken from ACCC Water Pricing Principles
ESCOSA	SA Water Final determination	06/2016	6.0%	Based entirely on historical excess returns
QCA	DBCT Draft Decision	06/2016	6.5%	6.4% historical excess returns 5.4% adjusted historical excess returns 6.0% surveys 8.2% adjusted DGM 7.4% Wright (as at August 2014)
Ofgem (UK)	RIIO-ED1	11/2014	7.1%	Allowed real return on the market of 6.5%, inflation forecast of 2.4%, contemporaneous 10-year government bond yield of 2.2%.
FERC (US)	Baltimore Gas et al	02/2016	8.3%	Allowed nominal return on equity of 10.0%, contemporaneous 10-year government bond yield of 1.7%.

Source: Frontier calculations.

122 When interpreting the figures set out in Table 2, it is important to bear in mind that:

- a. The process of regulators relying on estimates of other regulators has an element of circularity about it;
- b. It is important to consider any differences in the basis for the other MRP allowances and any differences in how the other MRP allowances are used; and

⁹² AusNet Draft Decision, Attachment 3, p. 229.

- c. The required return on the market may differ across countries.

123 For example, in relation to the second point above we note that:

- a. The ERA's decisions have been made under the National Electricity Rules and National Gas Rules and so are the decisions that are most comparable to those of the AER. Specifically, like the AER, the ERA is obliged to have regard to the prevailing conditions in the market for equity funds.⁹³
- b. IPART currently uses a risk-free rate that is 90 basis points above the prevailing government bond yield. This equates to an MRP of 8.1% in the case where the risk-free rate is set equal to the prevailing government bond yield;
- c. The ESC has noted that it is required to follow the ACCC's Water Pricing Principles⁹⁴ which requires that an MRP of 6.0% must be used.⁹⁵ The Water Pricing Principles were set in July 2011 and the 6.0% figure was based on data through to 2008;⁹⁶ and
- d. ESCoSA has adopted an MRP allowance based entirely on historical excess returns and gives no weight to any method that has regard to the prevailing conditions in the market for equity funds.

124 It is also important to understand that the Ofgem and FERC estimates set out above are figures that have been derived to be comparable with the AER's MRP allowance. Specifically, under the AER's approach the nominal allowed return on the market is computed as the sum of the contemporaneous 10-year nominal government bond yield and the allowed MRP of 6.5%.

125 The Ofgem approach is to set an allowed real return on the market of 6.5%.⁹⁷ We add to this an estimate of 10-year "breakeven inflation" of 2.8%, estimated using the relevant data from the Bank of England as at the date of the Ofgem decision, and using the approach set out by Ofgem.⁹⁸ This produces a nominal market return of 9.3%. From this, we subtract the contemporaneous 10-year nominal government bond yield of 2.2%, obtained from the Bank of England.⁹⁹ This produces a MRP allowance of 7.1% that is on the same basis as the AER's 6.5% allowance. Both are figures that can be added to the contemporaneous 10-

⁹³ NER 6.5.2(g); NGR 87(7).

⁹⁴ ESC Goulburn-Murray Final Decision, p. 1.

⁹⁵ ACCC Water Pricing Principles, Table 1, p. 28.

⁹⁶ ACCC Water Pricing Principles, p. 31.

⁹⁷ Ofgem, RIIO-ED1 Draft Determinations for the slow-track electricity distribution companies: Financial issues, p. 7.

⁹⁸ Ofgem, RIIO-T1 and RIIO-GD1 Review – Glossary of terms, p. 2.

⁹⁹ <http://www.bankofengland.co.uk/statistics/pages/yieldcurve/default.aspx>.

year government bond yield to produce an estimate of the nominal required return on the market.

126 We also note that, in this decision, Ofgem has stated that:

Our advisors argue and we accept that the equity market return does not necessarily decline with the risk free rate.¹⁰⁰

127 The FERC approach is to allow a nominal return on equity for the regulated business. In its approval of the return on equity in the recent Baltimore Gas case, the nominal allowed return on equity was 10.0%, with a further 0.5% available for becoming a member of a regional transmission organisation.¹⁰¹ We take the allowed nominal return on equity and subtract the contemporaneous 10-year government bond yield of 1.7% to produce an estimate of the MRP of 8.3%.¹⁰²

Surveys

128 The AER summarises the results of a number of surveys in its recent final decisions.¹⁰³ Shortly after the preparation of those decisions, Pablo Fernandez published the 2016 version of his MRP survey. The relevant outcomes of that survey are summarised in Table 3 below.

Table 3: Recent survey outcomes

Survey	Number of responses	Mean (%)	Median (%)
Fernandez et al (2016)	87	6.0%	6.0%

Source: Fernandez, P., A. Ortiz and I F Acin, Market risk premium used in 71 countries in 2016, Unpublished working paper, University of Navarra, Spain.

129 We note that we have previously recommended that surveys of this type should be given no material weight because:

- a. There is no information about the qualifications or expertise of the respondents;
- b. There is no information about the survey response rate, or about whether there is any bias in the response rates of different groups;
- c. The survey does not ask respondents about what they use the MRP for (e.g., classroom examples or pricing infrastructure assets);

¹⁰⁰ Ofgem, Methodology for assessing the equity market return, February 2014, p. 17.

¹⁰¹ 154 FERC 61,125, February 23 2016, p. 2.

¹⁰² Note that this is conservative in that it assumes that an equity beta of 1.0 has been used for the utility. FERC does not publish a CAPM beta point estimate, but rather sets the allowed return on equity based on consideration of a number of different models.

¹⁰³ AusNet Draft Decision, Attachment 3, Table 3-33, p. 218.

- d. The survey does not ask respondents whether they use the MRP in the CAPM, or some other model;
- e. The survey does not ask the respondents whether they pair their MRP response with the contemporaneous government bond yield or a higher number (as is the observed practice of many independent expert valuation professionals);
- f. The survey does not ask participants whether they have grossed-up their estimate for some assumed value of imputation credits, and if so whether they applied a theta of 0.6 or something else; and
- g. There is no information about when the survey was conducted, or about the level of government bond yields at the time the survey was conducted.

130 Moreover, the MRP figures reported in surveys are ex-imputation estimates – they have not been grossed-up to reflect the AER’s assumed value of imputation credits. Consequently, before they can be compared to the AER’s (with-imputation) 6.5% allowance, they must be adjusted. By way of example, the QCA has concluded that this adjustment requires the addition of 83 basis points.¹⁰⁴

Independent expert valuation reports

131 We have conducted a search for independent expert valuation reports that were released in 2016 and which pertained to transactions in excess of \$100 million. Since independent experts generally apply consistent approaches over time, we consider only one report per expert firm. This process produced four recent independent expert reports, as set out in Table 4 below.

Table 4: Recent independent expert valuation reports

Company name	Independent expert	Report date	Transaction value (\$ millions)
Ethane Pipeline Income Fund	Lonergan Edwards	31/03/2016	122
Pacific Brands Ltd	Grant Samuel	20/05/2016	1,055
Patties Foods Ltd	Deloitte	15/07/2016	197
STW Communications Group Ltd	KPMG	29/02/2016	338

Source: Connect 4.

132 All four experts set the required return on equity materially above the figure that would be obtained from inserting the current government bond yield and a 6.5% MRP into the SL-CAPM formula. The independent expert reports achieve the higher estimates of the required return on equity in three different ways:

¹⁰⁴ QCA, 2014, Aurizon Network, UT4 Draft Decision, p. 232.

- a. By using an estimate of the MRP higher than 6.5%;
- b. By using a risk-free rate above the contemporaneous government bond yield; and
- c. By applying an ad hoc increase to the mechanistic CAPM estimate.

133 For example, Grant Samuel begins with a mechanistic CAPM estimate of the required return on equity using the contemporaneous government bond yield and a MRP based on historical excess returns, concludes that the outcome is implausible in the prevailing market conditions, and makes a material upward adjustment.

134 Lonergan Edwards state:

In our view, the application of the current (very low) government bond yields and long-term average MRP is inappropriate in the context of determining required equity rates of return (discount rates). Theoretically, the anomalous currently low government bond interest rates could be allowed for by increasing the MRP. However, as it is difficult to reliably measure short-term movements in the MRP, we have instead increased the risk-free rate for the purposes of estimating required rates of return.¹⁰⁵

135 KPMG also use a risk-free rate that is higher than the contemporaneous government bond yield. They specifically note that the MRP and risk-free rate must be considered jointly and not in isolation:

...the individual variables should not be considered in isolation but rather be viewed as components appropriate for the construction of a discount rate as a whole...Consideration of these components in isolation may result in an inappropriate discount rate being determined.¹⁰⁶

136 For this reason, we consider the sum of the risk-free rate and MRP and define that to be the “required market return.” We then subtract the contemporaneous government bond yield to obtain an estimate of the “effective MRP.” These calculations are set out in Table 5 below.¹⁰⁷

¹⁰⁵ Lonergan Edwards, p. 47.

¹⁰⁶ KPMG, p. 85.

¹⁰⁷ Grant Samuel applies an upward adjustment at the WACC level. To find the required return on the market, we simply strip out the return on debt component for the case where beta is set to 1.

Table 5: The effective MRP used in recent independent expert valuation reports

Independent expert	Required market return	Contemporaneous government bond yield	Effective MRP
Lonergan Edwards	10.0%	3.1%	6.9%
Grant Samuel	11.2%	2.5%	8.7%
Deloitte	9.6%	1.8%	7.8%
KPMG	10.4%	2.4%	8.0%

Source: Connect 4.

137 The evidence in Table 5 is that independent experts are using estimates of the required return on equity that are materially higher than those being allowed by the AER's approach of adding a fixed 6.5% premium to the prevailing government bond yield.

138 Moreover, the MRP figures set out in Table 5 are ex-imputation estimates. Consequently, before they can be compared to the AER's 6.5% allowance, they must be grossed-up to reflect the AER's assumed value of imputation credits. By way of example, the QCA has concluded that this adjustment requires the addition of approximately 80 basis points.

139 On the issue of imputation credits, Lonergan Edwards specifically states that its WACC parameter estimates have been derived:

...without adjustment for imputation.¹⁰⁸

and Grant Samuel conclude that:

While acquirers are undoubtedly attracted by franking credits there is no clear evidence that they will actually pay extra for them or build it into values based on long term cash flows. Accordingly, it is Grant Samuel's opinion that it is not appropriate to make any adjustment.¹⁰⁹

140 Our preferred approach is to use estimates of the risk-free rate and MRP that are commensurate with the prevailing conditions in equity markets. In our view, the MRP that is commensurate with the prevailing conditions is materially higher than the AER's 6.5% allowance, in which case the required return on equity is materially higher than the AER's allowance.

141 Although some independent experts take a different path, they all reach the same conclusion – in the prevailing conditions in the market for equity funds, the required return on equity is materially higher than the AER's allowance.

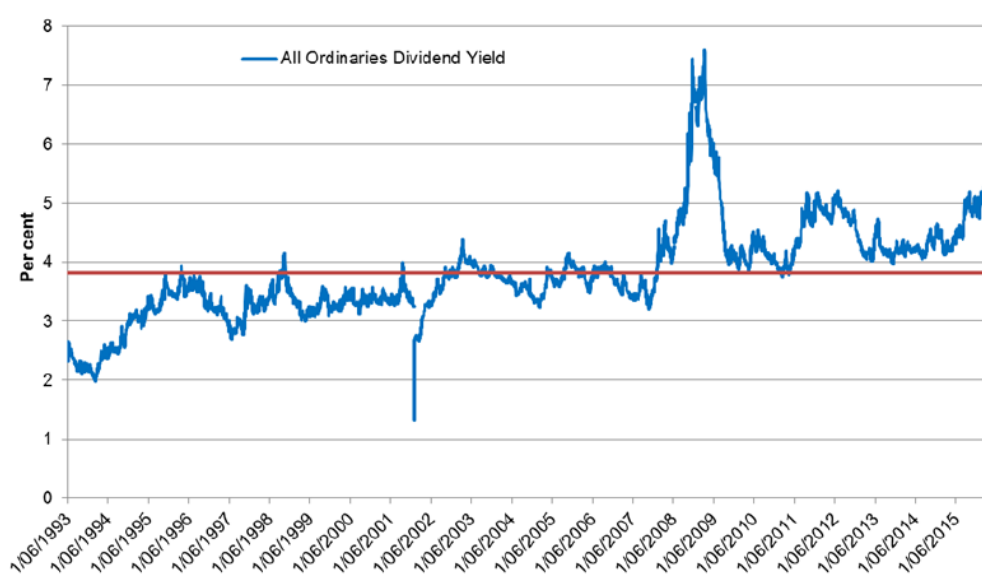
¹⁰⁸ Lonergan Edwards, p. 45.

¹⁰⁹ Grant Samuel, p. 11.

Conditioning variables

- 142 In its recent final decisions, the AER has regard to a number of conditioning variables as a qualitative cross check of its return on equity allowance.¹¹⁰ We set out below updated estimates of the conditioning variables that the AER considers.
- 143 The ERA has recently published updated figures for the dividend yield on the broad Australian market. We reproduce that data in Figure 14 below and note that dividend yields are not as high as during the peak of the GFC but are well above pre-GFC levels and the levels that were observed during 2013-14.

Figure 14: ERA updated dividend yield figures

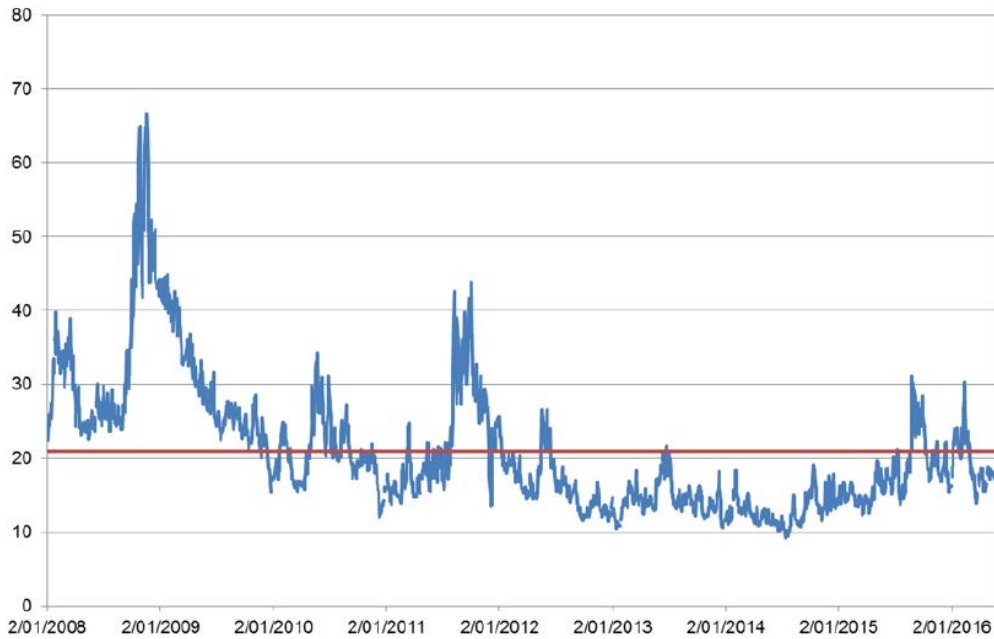


Source: ERA DBP Final Decision, Appendix 4, p. 121. Data from Bloomberg.

- 144 Figure 15 below sets out implied volatilities from stock index options with 30 days to maturity. This data provides an indication of expected market volatility over the subsequent month. These implied volatilities have varied within a relatively narrow band since the GFC.

¹¹⁰ AusNet Draft Decision, Attachment 3, beginning on p. 208.

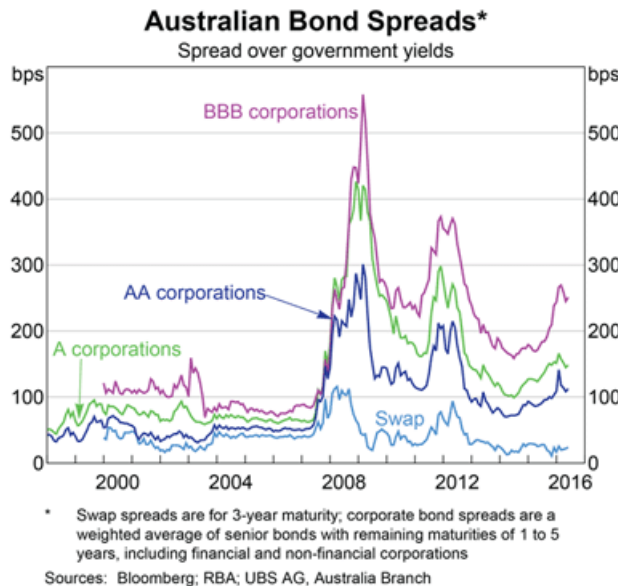
Figure 15: ERA updated option implied volatility figures



Source: ERA DBP Final Decision, Appendix 4, p. 121. Data from Bloomberg.

145 Figure 16 below sets out RBA estimates of corporate bond spreads. This figure shows that spreads have reduced since the GFC, but have increased over the last year.

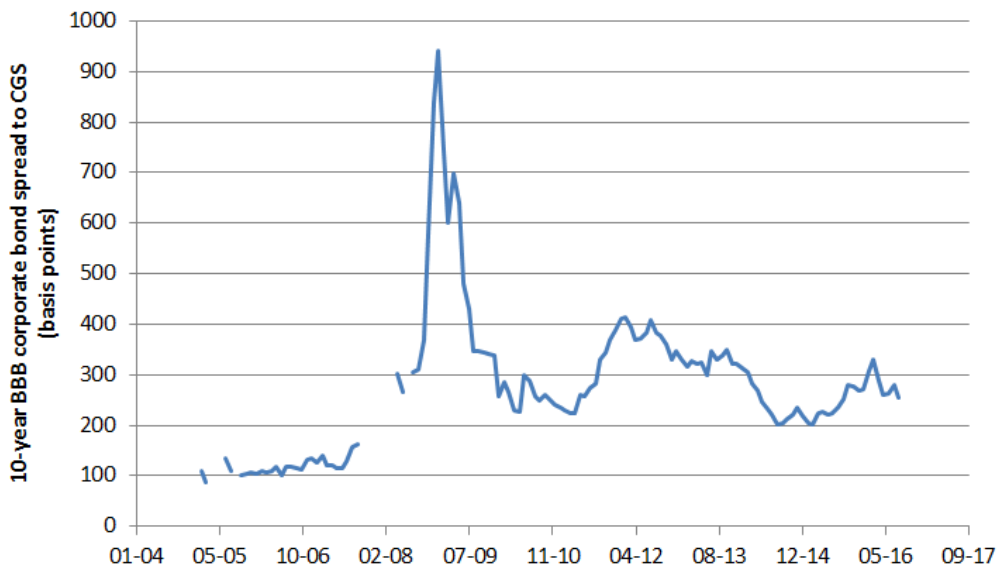
Figure 16: RBA bond spread estimates



Source: RBA Chart Pack, August 2016.

146 Figure 17 below sets out RBA estimates of 10-year BBB corporate bond spreads. This figure also shows that spreads have reduced since the GFC, but have increased over the last year.

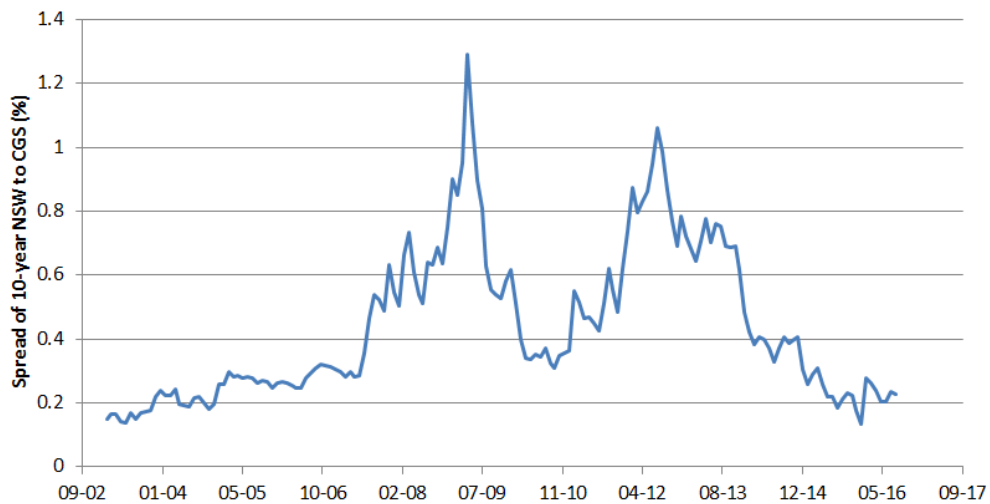
Figure 17: 10-year BBB corporate bond spreads



Source: RBA Table F3.

147 Figure 18 below sets out RBA estimates of the spread between 10-year NSW government bonds and 10-year Commonwealth government securities. This figure shows that the spread has returned to pre-GFC levels.

Figure 18: 10-year NSW-CGS bond spreads



Source: RBA Table F3.

148 In the absence of a formal econometric mapping of these conditioning variables to a point estimate of the MRP, it is difficult to know what to make of this evidence. In the prevailing market conditions of record low government bond yields, the challenge of mapping conditioning information to a point estimate of the MRP is particularly difficult. This is because some of the conditioning variables relate to required returns whereas others relate to risk premiums. For example, the dividend yield is related to overall required returns – a higher yield implies that a given set of dividends is being discounted at a higher rate. By contrast, corporate bond spreads relate to risk-premiums.

149 When government bond yields are near their long-run average levels, this distinction is much less important as risk premiums in the current and the historical data are computed by subtracting the same base risk-free rate. The analysis in the prevailing market conditions is complicated by the fact that current government bond yields are so far below the historical average over the period for which conditioning information is available.

150 Nevertheless, one conclusion that can be confidently drawn from the conditioning variable information is that it does not support the proposition that the required return on equity has plummeted by 25% since the Guideline – which is the implication of the AER’s recent decisions, as set out in Section 0 below.

The application of ‘cross checks’ at the equity risk premium level

151 The AER has also adopted the practice of applying a number of ‘cross checks’ to its equity risk premium, which is defined as the product of beta and the MRP. In our view, there are a number of problems with this approach.

There is no apparent mechanism for cross checks to have any influence on allowed returns

152 Logically, the AER’s allowed return will either pass or fail each cross check:

- a. If the allowed return passes the cross check, it is maintained and the cross check has had no impact on what the allowed return would otherwise have been;
- b. If the allowed return fails the cross check, logically, there are two possible approaches:
 - i. No adjustment is made to the original allowed return – in which case there is no point in performing the cross check; or
 - ii. An adjustment *is* made to make the allowed return consistent with the cross check – in which case the cross check overrides the primary evidence.

Since neither of these options is palatable, there is strong incentive to conclude that the allowed return passes every cross check that is applied.

153 By contrast, our preferred approach is to simply set out all of the relevant evidence and to weight each piece according to its relative strengths and weaknesses.

Applying the cross check at the ‘equity risk premium’ level can be misleading

154 The AER’s approach has been to conduct cross checks using independent expert reports and broker research at the equity risk premium level. The AER has defined the product of beta and the MRP as the equity risk premium and makes comparisons at that level. We provide two specific examples of why the AER’s application of this approach has, to date, resulted in misleading outputs.

The AER's approach has disregarded adjustments to historical estimates to account for the prevailing market conditions

155 The first example is the Grant Samuel independent expert report for Envestra Ltd. Grant Samuel begins with what it calls “a mechanistic application of formulae”¹¹¹ which involves inserting long-run historical average figures into the CAPM formula. This produces an equity risk premium range of 3.6% to 4.2%.¹¹² Grant Samuel makes a point of stating that this is an ex-imputation estimate.¹¹³ The AER acknowledges that its allowed equity risk premium is a with-imputation estimate, and makes an adjustment to the Grant Samuel estimate accordingly. Adding the AER's assumed value of imputation credits to the Grant Samuel estimates produces an equity risk premium range of 4.1% to 4.8%.¹¹⁴ The AER then concludes that, because its allowed equity risk premium of 4.55%¹¹⁵ lies within the Grant Samuel range, it passes this cross check.

156 However, Grant Samuel goes on explain why its mechanistic application is unlikely to reflect the prevailing market conditions and that “reasonable discount rates to apply to discounted cash flow analysis for regulated energy assets in current market conditions”¹¹⁶ are much higher. In reaching this conclusion, Grant Samuel refers to:

- a. DGM estimates of the required return on equity currently being higher than mechanistic CAPM estimates;
- b. The need to increase MRP estimates in the current market conditions;
- c. The fact that government bond yields were at historical lows such that a higher estimate may be warranted for the risk-free rate; and
- d. The fact that other market participants are using higher costs of equity capital in the current market conditions.¹¹⁷

157 Grant Samuel then report an increased WACC range that it considers to be consistent with the “current market conditions.”¹¹⁸ The equity risk premium that is consistent with this increased range, grossed up to include the AER's adjustment for imputation, is 5.8% to 8.2%. The lower bound of this range is

¹¹¹ Grant Samuel (2014), Appendix 3, p. 1.

¹¹² This is produced from a beta range of 0.6 to 0.7 and a MRP of 6.0%. See Grant Samuel (2014), Appendix 3, p. 7.

¹¹³ This is produced from a beta range of 0.6 to 0.7 and a MRP of 6.0%. See Grant Samuel (2014), Appendix 3, pp. 9-10.

¹¹⁴ AusNet Draft Decision, Attachment 3, p. 223.

¹¹⁵ Produced from a beta of 0.7 and a MRP of 6.5%.

¹¹⁶ Grant Samuel (2014), Appendix 3, p. 9.

¹¹⁷ Grant Samuel (2014), Appendix 3, pp. 8-9.

¹¹⁸ Grant Samuel (2014), Appendix 3, p. 9.

materially above the AER's allowance and the mid-point of this range is more than 50% above the AER's allowance.

158 In our view, the conclusion that this cross check has been passed because the AER's allowed equity risk premium is within a range that Grant Samuel has specifically disavowed as being inappropriate in the current market conditions, and which Grant Samuel corrected before using it in their valuation, is highly misleading. Even the lower bound of the range that Grant Samuel actually adopted as being appropriate for the current market conditions is materially above the AER's allowance.

The AER's approach disregards uplifts to the risk-free rate

159 A second example comes from the February 2016 Macquarie Research report for DUET.¹¹⁹ That report sets out an equity risk premium (adjusted to reflect the AER's assumed value of imputation credits) of 4.7%,¹²⁰ which is only marginally above the AER's allowance of 4.55%.

160 However, that report adopts a risk-free rate that is 1.3%¹²¹ above the contemporaneous 10-year government bond yield. Thus, the premium to the contemporaneous 10-year government bond yield is 6.0%, which is materially above the AER's allowance.

The AER's reasons for disregarding uplifts

161 In its recent decisions, the AER has explained its reasons for disregarding the evidence of independent experts and brokers applying uplifts to mechanistic CAPM estimates in the current market conditions as follows:

Uplifts applied by brokers and valuers to initial estimates may be inconsistent with the ARORO. They may reflect non-systematic risks, or be designed to account for risks not addressed in cash flow forecasts, or (to the extent there is any) the expectation of outperformance of regulatory allowances. They may also reflect the term structure of the proxies used to estimate the risk free rate and/or market risk premium, the relevant investment period exceeding the term of the proxies, and the one-off nature of transactions on which they are advising (which differs from our regulatory task where the rate of return is reassessed for each regulatory control period).¹²²

162 The AER has provided no evidence that any of the conjectured issues have actually affected any of the reports that it considers. By contrast, the Grant Samuel Envestra report clearly states that the uplift is made because the mechanistic CAPM approach (on which the AER relies) does not produce appropriate estimates in the current market conditions – as set out above. In our view, the evidence that the independent expert has made an adjustment to its mechanistic CAPM estimate because it considers that to be required in the prevailing market conditions is relevant evidence that should not be disregarded.

¹¹⁹ Macquarie Research, 2016, DUET Group, February.

¹²⁰ $0.8 \times (5.0\% + 0.83\%) = 4.7\%$.

¹²¹ 3.8% vs. 2.5%.

¹²² AusNet Draft Decision, Attachment 3, p. 84.

163 Moreover, in its recent decisions, the AER has established a seemingly impossible burden of proof in relation to adjustments to the risk-free rate. On this point, the AER conjectures that it is possible that brokers and experts may adopt a risk-free rate above the contemporaneous government bond yield, not because they think that is required to produce sensible estimates of the required return in the prevailing market conditions, but because they use a term structure whereby they apply a lower discount rate to cash flows over the next 10 years. The AER provides no evidence of any broker or independent expert making any mention of this conjectured term structure approach. The AER then states that it will continue to disregard the uplifts that brokers and independent experts apply to the risk-free rate because no stakeholder has “provided compelling evidence that valuers do not adjust risk free rate estimates to account for term structure.”¹²³ That is, the task for stakeholders is to prove a negative – that valuers have not used an approach that none of them have mentioned.

Cross checks should not be applied at the ‘equity risk premium’ level

164 NER 6.5.2(f) and 6.5.2(g) state that:

(f) The return on equity for a *regulatory control period* must be estimated such that it contributes to the achievement of the *allowed rate of return objective*.

(g) In estimating the return on equity under paragraph (f), regard must be had to the prevailing conditions in the market for equity funds.

165 That is, the Rules require that the *return on equity* must be commensurate with the efficient financing costs of the benchmark efficient entity and with the prevailing conditions in the market. By contrast, the equity risk premium is only one part of the overall return on equity. Even if it were the case that the equity risk premium allowed by the AER were consistent with that adopted by some market practitioners, the task would not finish there – it would still be necessary to consider the other elements of the return on equity. As set out above, there is evidence that market practitioners regularly adopt higher risk-free rates and apply other uplifts to the return on equity. Moreover, these adjustments and uplifts tend to increase in frequency and magnitude as government bond yields fall – as they have in the prevailing market conditions. Thus, a cross check that ignores these elements will be incomplete.

166 In summary, we cannot test whether the *return on equity* is commensurate with the efficient financing costs of the benchmark efficient entity and with the prevailing conditions without considering the entire return on equity. A cross check of one component of the return on equity will be incomplete – and the problem is likely to be exacerbated in the current market conditions where government bond yields are at record lows.

¹²³ AusNet Draft Decision, Attachment 3, p. 84.

Comparing ‘with imputation’ estimates with ‘ex imputation’ estimates is misleading

167 The AER notes that its equity risk premium figures include its assumed value of imputation credits whereas the figures reported by independent experts and brokers do not. Thus, the AER makes an adjustment for imputation to provide a like-with-like comparison. However, the AER continues to report the ex-imputation estimates, giving them equal billing (and apparently equal weight) with the properly adjusted and comparable with-imputation estimates.¹²⁴

168 The AER states that its continued reliance on ex-imputation adjustments is on the basis that the MRP estimates may have been supplied to the broker or independent expert by some third party, who might have grossed them up to account for the value of imputation credits that the AER has used such that the estimates are in fact already comparable:

...it is unclear the extent to which these estimates may be based on third party estimates that already account for the value of imputation credits.¹²⁵

169 However, by way of one example, Grant Samuel very clearly state that their estimates have not been adjusted for any assumed benefit of imputation in any way,¹²⁶ and this is the standard approach adopted by independent experts.

¹²⁴ See, for example, AusNet Draft Decision, Attachment 3, pp. 221-223.

¹²⁵ AusNet Draft Decision, Attachment 3, p. 85.

¹²⁶ Grant Samuel (2014), Appendix 3, p. 10.

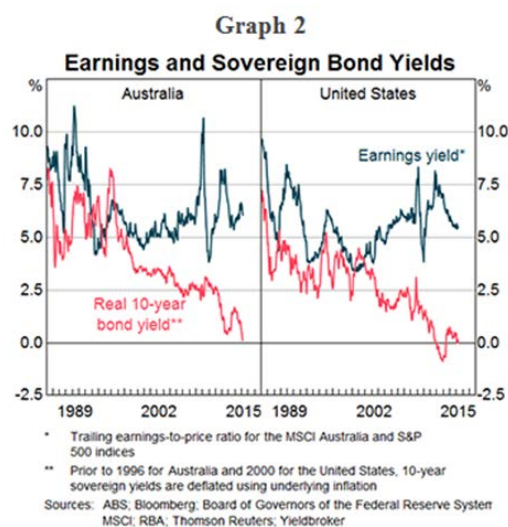
5 Views from the market

170 Evidence from a range of market participants is consistent with the weight of evidence set out above – that the required return on equity has remained relatively stable even as government bond yields have fallen. Market participants do not agree with the AER’s view that the GFC, and the recent dramatic decline in government bond yields, resulted in a material one-for-one fall in the required return on equity.

5.1 Reserve Bank of Australia

171 In April 2015, Reserve Bank Governor Glenn Stevens stated that the equity risk premium appears to have risen to offset the recent falls in the risk-free rate such that the required return on equity has not fallen:

...post-crisis, the earnings yield on listed companies seems to have remained where it has historically been for a long time, even as the return on safe assets has collapsed to be close to zero (Graph 2). **This seems to imply that the equity risk premium observed *ex post* has risen even as the risk-free rate has fallen and by about an offsetting amount.**¹²⁷



172 Governor Stevens went on to note that the returns on equity required by investors have not shifted even though risk-free rates have fallen to exceptionally low levels:

...it might be explained simply by stickiness in the sorts of ‘hurdle rates’ that decision makers expect investments to clear. I cannot speak about US corporates, but this would seem to be consistent with the observation that we tend to hear from Australian liaison contacts that **the hurdle rates of return that boards of directors apply to investment propositions have not**

¹²⁷ Glenn Stevens, Speech to the Australian American Association, New York, 21 April 2015. Emphasis added.

shifted, despite the exceptionally low returns available on low-risk assets.¹²⁸ [Emphasis added]

173 He goes on to further consider the explanation that:

...the risk premium being required by those who make decisions about real capital investment has risen by the same amount that the riskless rates affected by central banks have fallen.¹²⁹

5.2 The Federal Reserve Bank

174 In a recent paper for the Federal Reserve Bank of New York, Duarte and Rosa (2015) estimate 20 models of the MRP (which they call “ERP” for equity risk premium). They conclude that the ERP is currently at elevated levels – even above the levels reached during the GFC:

In this article, we estimate the ERP by combining information from twenty prominent models used by practitioners and featured in the academic literature. Our main finding is that the ERP has reached heightened levels. The first principal component of all models –a linear combination that explains as much of the variance of the underlying data as possible– places the one-year-ahead ERP in June 2012 at 12.2 percent, above the 10.5 percent that was reached during the financial crisis in 2009.¹³⁰

175 They conclude that the reason for the elevated ERP is that the required return on equity remains at normal levels even as government bond yields have fallen to exceptionally low levels:

Our analysis provides evidence that the current level of the ERP is consistent with a bond-driven ERP: expected excess stock returns are elevated not because stocks are expected to have high returns, but because bond yields are exceptionally low. The models we consider suggest that expected stock returns, on their own, are close to average levels.¹³¹

5.3 McKinsey Inc.

176 Dobbs, Koller and Lund (2014) from McKinsey Inc. examine the impact of the recent world-wide decline in government bonds yields. Like the Reserve Bank and independent valuation experts, they note that the required return on equity appears to be quite stable even as government bond yields decline materially. They observe that equity investors and corporate managers have maintained stable required returns – they have not reduced required returns one-for-one with recent declines in government bond yields:

...a “rational expectations” investor who takes a longer-term view should regard today’s ultra-low rates as temporary and therefore likely will not reduce

¹²⁸ Glenn Stevens, Speech to the Australian American Association, New York, 21 April 2015. Emphasis added.

¹²⁹ Glenn Stevens, Speech to the Australian American Association, New York, 21 April 2015.

¹³⁰ Duarte and Rosa (2015), p. 1.

¹³¹ Duarte and Rosa (2015), p. 20.

the discount rate used to value future cash flows. Moreover, such investors may assign a higher risk premium in today's environment. Our conversations with management teams and corporate boards suggest that they take a similar approach when they consider investment hurdle rates. None of those with whom we spoke have lowered the hurdle rates they use to assess potential investment projects, reflecting their view that low rates will not persist indefinitely.¹³²

177 Dobbs, Koller and Lund (2014) also note that the empirical evidence supports the proposition that the required return on equity has remained stable, even as government bond yields have fallen:

Empirically, if investors did reduce their discount rate on future corporate-earning streams, we would expect to see P/E¹³³ ratios rise. Over the last several years of QE,¹³⁴ however, P/E ratios have remained within their long-term average range.¹³⁵

178 That is, if the required return on equity had fallen in line with the fall in government bond yields (as the AER's allowed returns would suggest), we would see an increase in P/E ratios. However, in the prevailing conditions in the Australian market, the exact opposite has occurred – P/E ratios have generally *fallen* with the recent decline in government bond yields, as set out in Figure 19 below. This is consistent with recent increases, rather than decreases, in required returns. Indeed, the correlation between Australian P/E ratios and the 10-year government bond yield has been positive 0.65 in the period since November 2012.

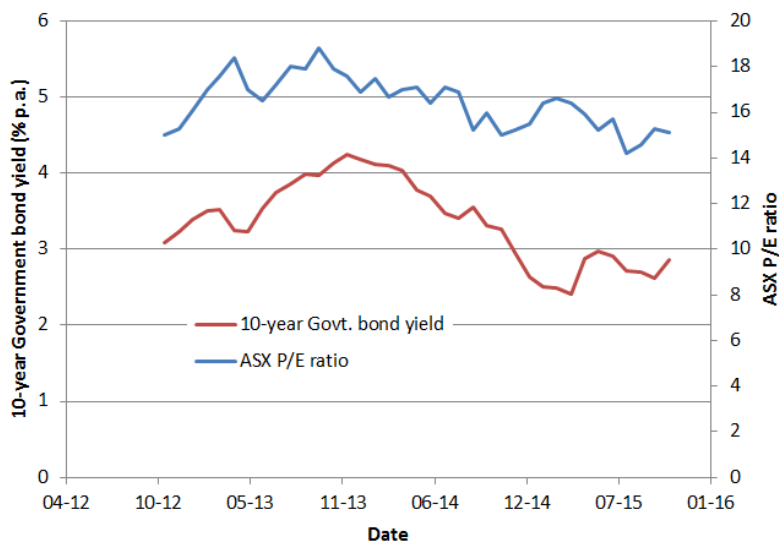
¹³² Dobbs, Koller and Lund (2014), p. 17.

¹³³ This is a reference to the price-earnings ratio, the ratio of the price per share to earnings per share. It is the inverse of the earnings yield that is the subject of Figure 2 in Stevens (2015).

¹³⁴ Quantitative easing is a reference to the expansive monetary policy that has been employed by many central banks since the onset of the GFC.

¹³⁵ Dobbs, Koller and Lund (2014), p. 17.

Figure 19: Australian P/E ratios and government bond yields

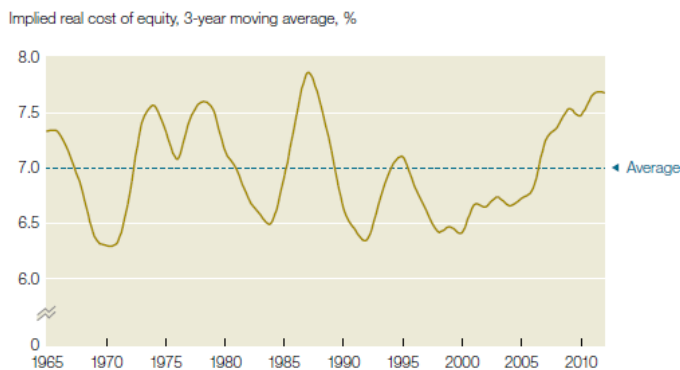


Source: RBA Tables f07 and f02.

179 Dobbs, Koller and Lund (2014) go on to report that the implied real required return on equity has remained stable – within a narrow band even as government bond yields have varied materially. They summarise this evidence in Figure 20 below.

Figure 20: Implied real required return on equity

The implied real cost of equity in the United States has remained within the historical norms.



Source: Dobbs, Koller and Lund (2014), Exhibit 2, p. 17.

180 They conclude that this evidence suggests that equity investors have offset the decline in government bond yields by adopting a higher market risk premium – leaving the required return on equity largely unchanged:

Since 2000, this implied real cost of equity has been rising steadily, but it has remained well within the historical range since the start of the crisis (Exhibit 2). This implies that even if investors believe the risk-free rate has fallen, they have offset this with a higher equity risk premium.¹³⁶

¹³⁶ Dobbs, Koller and Lund (2014), pp. 17-18.

In another very recent McKinsey publication, Dobbs, Koller, Lund, Ramaswamy, Harris, Krishnan and Kauffman (2016) also conclude that the cost of equity capital has not declined with the recent declines in government bond yields:

...our analysis shows that over the past 50 years the real cost of equity has usually stayed within a narrow band of 6 to 8 percent, averaging about 7 percent. This has remained the case even with ultra-low interest rates. This indicates that even if investors believe the risk-free rate has fallen because of a decline in government bond yields, they have offset this with a higher equity risk premium. Alternately, it may be that investors do not view the government bond rate as the appropriate proxy for the risk-free rate, particularly in today's environment.²⁰ In either case, the total cost of equity for the average company does not appear to have benefited from ultra-low interest rates. If it had, we would expect to see PE ratios and stock prices substantially above today's levels. This is consistent with the discount rates we observe companies and bankers using to evaluate and price acquisitions. It is also consistent with our observation that most management teams and corporate boards have not reduced their investment hurdle rates or minimum returns for projects.¹³⁷

5.4 NERA – US

181 In a report titled *The decoupling of treasury yields and the cost of equity for public utilities*, Strunk (2014) begins by identifying that current financial market conditions are unique in terms of an:

...unprecedented trend in the current capital markets—specifically, intervention by the Federal Reserve in the government bond market. The current capital market conditions are unique from a historical perspective.¹³⁸

182 He goes on to note that government bond yields are currently at historical lows, and thus questions the use of the historical excess returns approach to estimating the MRP in the current market conditions:

Current capital market conditions raise doubts about whether the risk premium, measured using historical data, is applicable today. Rate-of-return models that rely upon the historical premium assume that investors' total return expectations move in lock step with treasury yields. Hence, if the historic premium is still valid, it implies a significant decrease in required returns on equity for both industrial firms and public utilities.¹³⁹

183 He proposes that the DGM method is likely to produce a more reliable estimate of the MRP in the current market conditions:

NERA estimates the forward-looking risk premium using the well-established dividend growth model...This approach has the advantage that it incorporates the most recent information from capital markets and thus is most consistent with the intent of any cost of equity calculation, which is to reflect current forward-looking expectations.¹⁴⁰

¹³⁷ Dobbs, Koller, Lund, Ramaswamy, Harris, Krishnan and Kauffman (2016), p. 12.

¹³⁸ Strunk (2014), p. 1.

¹³⁹ Strunk (2014), p. 1.

¹⁴⁰ Strunk (2014), p. 2.

184 Of course, in conditions where the required return on equity is remaining quite stable while government bond yields are falling, the DGM method produces higher estimates of the MRP:

In its most recent analysis, NERA found the forward-looking risk premium to be 8.36 percent, which compares to a historic risk premium of 6.70 percent, a difference of 166 basis points. This shows that the use of a historic risk premium would significantly understate the cost of equity for utilities.¹⁴¹

185 Strunk goes on to note that US regulators have factored this evidence into recent rate decisions by setting an allowed return on equity that has been very stable over time, even as government bond yields have declined materially. He shows that the average allowed return on equity has varied within a narrow range of 10 to 10.5 per cent even as government bond yields declined from 4.91% to 2.92%.¹⁴² A stable return on equity allowance is achieved by adopting a higher MRP in the current market conditions of low government bond yields:

...regulators implicitly recognize the higher equity risk premium that prevails in today's market. They do so by approving rates-of-return that contain a higher premium over government bond yields than has historically prevailed.¹⁴³

186 Strunk concludes that:

Most important is making sure that the rate of return somehow incorporates the current forward-looking investor expectations and does not rely solely upon unadjusted historic expectations.¹⁴⁴

5.5 The Economic Regulation Authority

187 In its recent ATCO Gas Final Decision, the ERA increased its MRP estimate from 5.5% to 7.6% to offset the fall in its estimate of the risk-free rate, stating that:

...the Authority has now concluded that it is not reasonable to constrain the MRP to a fixed range over time. The erratic behaviour of the risk free rate in Australia to date, and more particularly, its pronounced decline in the current economic environment, leads to a situation where the combination of a fixed range for the MRP and prevailing risk free rate may not result in an outcome which is consistent with the achievement of the average market return on equity over the long run.¹⁴⁵

¹⁴¹ Strunk (2014), p. 2.

¹⁴² Strunk (2014), Table 1, p. 2.

¹⁴³ Strunk (2014), p. 3.

¹⁴⁴ Strunk (2014), p. 3.

¹⁴⁵ ERA, ATCO Gas Final Decision, Paragraph 1173.

5.6 IPART

188 IPART applies a default 50% weight to forward-looking estimates of the MRP – primarily a number of DGM specifications.¹⁴⁶ In its most recent update, IPART adopts a contemporaneous MRP of 7.9%.¹⁴⁷

5.7 Ofgem

189 In a report for UK regulator Ofgem, Wright and Smithers (2014) consider how the recent decline in government bond yields might affect the approach to estimating the MRP.

190 They begin with a consideration of the earlier Smithers & Co report by Wright, Mason and Miles (2003),¹⁴⁸ which proposes that the real required return on equity should be assumed to be constant on the basis of data from long-term historical averages of realised stock returns. Wright and Smithers note that this approach (which the AER refers to as the “Wright approach”) has been employed consistently by UK regulators since then.

191 Wright and Smithers (2014) conclude that:

... the [UK’s Competition Commission] has given at least some weight to a model in which the expected market return is assumed to have been pulled down by falls in the risk-free rate. In Mason et al we argued against this model, pointing to the lack of any historical stability in the risk-free rate, and hence in estimates of the market equity premium. We believe that recent events have simply added to the weight of evidence against this approach.

In contrast the Mason et al/Ofgem approach implies a counter-cyclical equity premium, which is consistent with some more recent academic research, and with recent patterns in observable proxies for risk premia such as corporate bond spreads. It also has the advantage of providing stability in the regulatory process.

We conclude that there is no plausible case for any further downward adjustment in the assumed market cost of equity based on recent [downward] movements in risk-free rates.¹⁴⁹ [Emphasis added]

192 They go on to conclude that:

Thus both historical and more recent evidence point to the same conclusion: in contrast to the stock return there is no evidence of stability in the risk-free rate, at any maturity. As a direct implication, there is no evidence of stability of the market equity premium. Without such evidence, **there is no empirical basis for the assumption that falls in risk-free rates should translate to falls in expected market returns.**¹⁵⁰ [Emphasis added]

¹⁴⁶ IPART, Review of WACC Methodology, December 2013.

¹⁴⁷ IPART, WACC Biannual update, August 2015.

¹⁴⁸ Wright and Smithers (2014) refer to this earlier paper as “Mason et al.”

¹⁴⁹ Wright and Smithers (2014), p. 2.

¹⁵⁰ Wright and Smithers (2014), p. 15.

5.8 Federal Energy Regulatory Commission (FERC): New England rate case

193 In a recent decision, the US Federal Energy Regulatory Commission (FERC) noted that its previous approach had been to adjust the allowed return on equity (ROE) in lockstep with changes in the relevant government bond yield, the practice that has been maintained by the AER since its 2013 Guideline:

The Commission's practice traditionally has been to adjust the ROE using a 1:1 correspondence between the ROE and the change in U.S. Treasury bond yields—i.e., for every basis point change in the U.S. Treasury bond yield the Commission would adjust the ROE by one basis point.¹⁵¹

194 However, FERC concluded that in the prevailing market conditions such an approach “may not produce a rational result,”¹⁵² and that:

Upon consideration of the record evidence in this proceeding, and in light of the economic conditions since the 2008 market collapse more generally, U.S. Treasury bond yields do not provide a reliable and consistent metric for tracking changes in ROE.¹⁵³

195 The primary reason for FERC’s conclusion is that:

The capital market conditions since the 2008 market collapse and the record in this proceeding have shown that there is not a direct correlation between changes in U.S. Treasury bond yields and changes in ROE.¹⁵⁴

5.9 Federal Energy Regulatory Commission (FERC): New York rate case

196 In another recent decision, FERC concluded that inserting the historical excess returns estimate of the MRP into the CAPM is likely to produce an unreliable estimate of the required return on equity:

Given the recent trends of near-historic low yields for long-term U.S. Treasury bond rates, the CAPM's input for the “risk-free” rate, we find that it is a reasonable assumption that the current equity risk premium (which is added to the risk-free rate to calculate the cost of equity data point that determines the slope of the CAPM curve) exceeds the 86-year historical average used as the consultants’ CAPM input.¹⁵⁵

197 FERC identified the problem with a mechanistic implementation of the CAPM as follows:

The current low treasury bond rate environment creates a need to adjust the CAPM results, consistent with the financial theory that the equity risk premium

¹⁵¹ FERC Opinion 531, Docket EL11-66-001, June 2014, Paragraph 159.

¹⁵² FERC Opinion 531, Docket EL11-66-001, June 2014, Paragraph 159.

¹⁵³ FERC Opinion 531, Docket EL11-66-001, June 2014, Paragraph 160.

¹⁵⁴ FERC Opinion 531, Docket EL11-66-001, June 2014, Paragraph 158.

¹⁵⁵ FERC Docket ER14-500-000, January 2014, pp. 35-36.

exceeds the long-term average when long-term US Treasury bond rates are lower than average, and vice-versa.¹⁵⁶

198 FERC allowed a return on equity of 12.5%:

We find that NYISO's¹⁵⁷ proposed ROE¹⁵⁸ value of 12.5 percent is adequately supported by substantial evidence.¹⁵⁹

5.10 Federal Energy Regulatory Commission (FERC): New York rate case

199 In the *Bangor Hydro* case that addresses a range of issues relating to setting the allowed return on equity, FERC noted that it had previously rejected CAPM analyses that were “based on historic market risk premiums.” FERC accepted the CAPM analysis in the current case because the present:

CAPM analysis is based on forward-looking investor expectations for the market risk premium.¹⁶⁰

¹⁵⁶ FERC Docket ER14-500-000, January 2014, pp. 35-36.

¹⁵⁷ New York Independent System Operator.

¹⁵⁸ Allowed return on equity.

¹⁵⁹ FERC Docket ER14-500-000, January 2014, pp. 35-36.

¹⁶⁰ FERC Docket EL11-66-001, p. 71.

6 The implications of a “nearly constant” approach to the MRP

6.1 The AER’s approach is to set a nearly constant MRP allowance

200 Since the Guideline, the AER has allowed an MRP of 6.5% in every one of its draft and final decisions. The AER also adopted an MRP of 6.5% in its previous review of WACC parameters in 2009. In every decision since its inception, the AER has allowed an MRP of either 6.0% or 6.5%.

201 Although the AER’s position is that “the MRP likely varies over time,”¹⁶¹ the AER’s consultants now recognise that the AER’s approach is to set an effectively constant MRP allowance:

The AER decisions hold the risk premium nearly constant (although upward adjustments of 0.5% have been made). As (sic) result the regulated return tends to fall 1 for 1 with falls in the risk free rate.¹⁶²

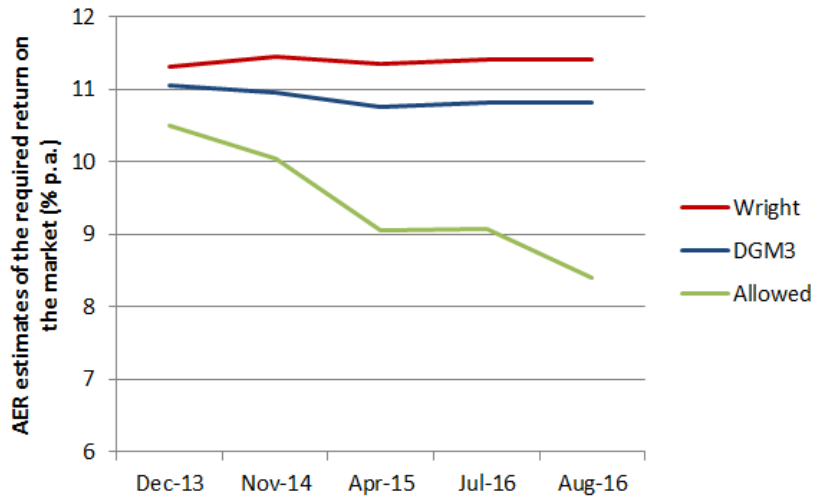
6.2 The allowed return on equity falls one-for one with falls in government bond yields

202 As Partington and Satchell (2016) note above, the inevitable consequence of setting a nearly constant MRP is that the allowed return on equity falls one-for-one with falls in government bond yields. The AER adds its constant risk premium to the contemporaneous government bond yield and the sum is adopted as the allowed return on equity. Since government bond yields have fallen sharply since the Guideline, the AER’s allowed return on equity has also fallen correspondingly. This occurs in spite of the evidence set out above – including the AER’s own DGM estimates – that the required return on equity has remained remarkably stable since the Guideline. The distinction between the AER’s estimates and its regulatory allowance is summarised in Figure 21 below.

¹⁶¹ AER (2013), Rate of Return Guideline: Explanatory Statement, p. 91.

¹⁶² Partington and Satchell (2016), p. 17.

Figure 21: The required return on the market – AER estimates and allowances

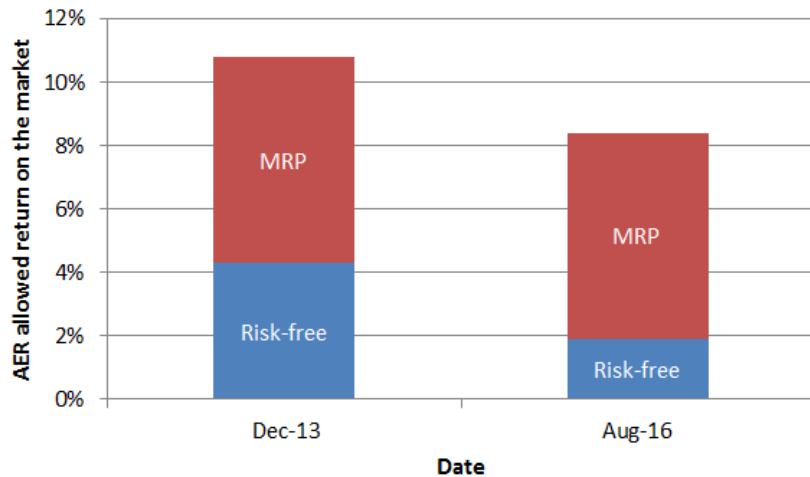


Source: Rate of Return Guideline, Explanatory Statement, Appendix; Ausgrid Draft Decision Attachment 3; Ausgrid Final Decision Attachment 3; AusNet Draft Decision Attachment 3.

203

Since its Guideline in December 2013, the yield on 10-year government bonds has fallen from 4.1% to 1.9%.¹⁶³ The AER has maintained the same 6.5% MRP in every one of its decisions since December 2013. Thus, the AER considers that the required return on equity for the average firm¹⁶⁴ has fallen from 10.6%¹⁶⁵ in December 2013 to 8.4%¹⁶⁶ now. This represents a decline of more than 25% over the last two and a half years, as illustrated in Figure 22 below.

Figure 22: AER estimate of the required return on equity for an average firm



Source: AER Rate of Return Guideline, December 2013; MRP allowance from AusNet Draft Decision, May 2016; RBA current 10-year government bond yield August 2016.

¹⁶³ <http://www.rba.gov.au/statistics/tables/xls/f02hist.xls>.

¹⁶⁴ Which, under the CAPM, is equal to the sum of the risk-free rate and the MRP.

¹⁶⁵ 4.1% + 6.5%.

¹⁶⁶ 1.9% + 6.5%.

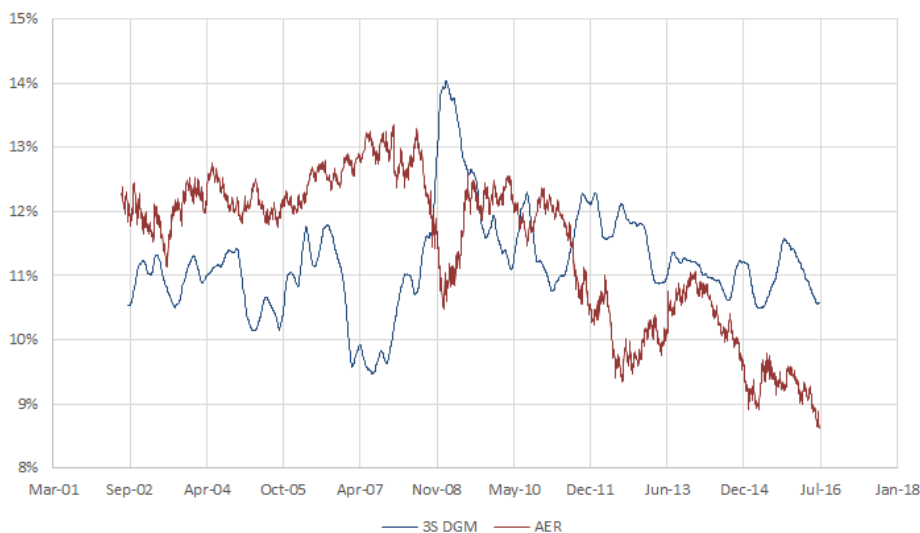
204 By contrast, as set out above, there is a substantial body of evidence to support the propositions that:

- a. Real-world investors do **not** determine the return that they require by simply adding a constant figure to the contemporaneous government bond yield; and
- b. The required return on equity has **not** fallen by over 25% in the last two and a half years.

205 The broader effect of the AER's approach to distilling the MRP evidence into a single regulatory allowance is illustrated in Figure 23. That figure contrasts the AER's allowance for the required return on the market with mid-point estimates from the AER's three-stage DGM.¹⁶⁷

206 The most obvious point of departure is during the global financial crisis (GFC) in late 2008. The approach of applying a fixed premium to the contemporaneous government bond yield implies that the required return on equity *fell* dramatically during the peak of the GFC – as investors moved funds into government bonds, lowering yields. Such an outcome is obviously implausible – the required return on equity capital does *not* fall materially during financial crises. Of course it is absurd to suggest that equity capital becomes cheaper and more abundant during financial crises. But that is precisely what the 'fixed premium' approach to setting the MRP suggests. By contrast, the AER's own forward-looking DGM method suggests that the required return on equity increased during the GFC.

Figure 23: The required return on the market – AER mid-point DGM estimates and regulatory allowances



Source: Frontier Economics.

207 Figure 23 also shows that the divergence between the two methods is not confined to the peak of the GFC. For example, throughout 2007 when equity

¹⁶⁷ That is, estimates based on the AER's specification and implementation of the DGM with a long-run growth rate of 4.6%.

prices were very high and it is widely accepted that equity capital was relatively cheap, the AER-style fixed premium approach suggests that the cost of equity capital was very high.

208 During average market conditions, when government bond yields are closer to their long-run mean, both approaches produce similar estimates of the required return on equity. This is the case through 2002-2005.

209 Importantly, the two approaches currently suggest very different required returns. Whereas the DGM method suggests that the required return on equity has remained quite stable since 2013 (hovering around 11%), the AER allowance suggests a material decline in the cost of equity.

6.3 The source of the problem

210 We have shown above that the AER's approach to setting the MRP allowance produces implausible outcomes in some market conditions, including the current market conditions. These implausible outcomes arise because the AER's estimation approach produces a nearly constant estimate of the MRP – either 6.0% or 6.5% in every decision since its inception. This results in an allowed return on equity that is volatile – it rises and falls one-for-one with every change in government bond yields.

211 In some market conditions, the true required return on equity may well fall when government bond yields fall. However, in other market conditions the required return on equity may stay constant, or even rise, as government bond yields fall. It depends on the reasons why the government bond yield has fallen.

212 The problem with the AER approach is that it assumes that the required return on equity **always** falls one-for-one with **every** decline in government bond yields. This unwavering assumption leads to implausible estimates in some market conditions, including the current market conditions.

213 In this regard, Partington and Satchell (2016) have recently advised the AER that:

We begin by stating our position that it seems likely that the risk premium changes over time. It is also entirely possible that the risk premium sometimes changes at the same time as interest rates change, but that change may either be in the same direction as the interest rates, or in the opposite direction. At any point in time, there are three possibilities for the market risk premium, it may remain unchanged, it may go down, or it may increase. There is no compelling reason for an interest rate decrease to automatically be associated with an increase in the market risk premium.¹⁶⁸

214 We agree with everything that Partington and Satchell have said in the above paragraph. However, just as there is “no compelling reason for an interest rate decrease to automatically be associated with an increase in the market risk

¹⁶⁸ Partington and Satchell (2016), p. 17.

premium,” there is equally no compelling reason for an interest rate decrease to *never* be associated with an increase in the market risk premium.

215 This is the crux of the problem with the AER’s nearly constant MRP. Even though government bond yields have halved since the Guideline, and even though there is strong evidence that the real-world required return from equity holders has not fallen one-for-one with those yields, the AER has maintained the same MRP allowance.

216 We do not suggest that the AER should *always* increase the MRP allowance *whenever* the government bond yield falls or that any increase should completely offset the fall in yields. We simply suggest that the AER should *sometimes* increase the MRP allowance to *partially* offset the fall in yields – when objective evidence supports that course of action. The problem is that the historical experience has been that the AER’s approach has not permitted *any* increase in the MRP to offset *any* of the material decline in government bond yields that has occurred since the Guideline. In our view, the prevailing market conditions support an increase in the MRP to partially offset the recent material decline in government bond yields.

7 The reliability of DGM estimates of the MRP

7.1 Context

217 Because the long-run mean of historical excess returns is effectively constant over time, if the MRP is set predominantly on the basis of that evidence the allowed MRP will be nearly constant over time – reflecting the long-run average of historical outcomes.

218 To obtain an estimate of the MRP that is forward-looking and commensurate with the prevailing conditions in the market, some material weight would have to be applied to forward-looking estimates that are based on prevailing market prices.

219 In this regard, the AER has stated that, but for some concerns about DGM estimates not being perfectly reliable, it would adopt the DGM estimate as the allowed MRP:

If a perfectly reliable estimate of the MRP could be generated from market prices it would be reasonable to use this estimate. However, no such estimate exists.¹⁶⁹

220 The AER has further stated that, while it has some concerns about the reliability of input assumptions, those concerns must be weighed against the positive features of DGM estimates:

Notwithstanding our concerns about the reliability of input assumptions, we consider DGM estimates have strong theoretical grounding and are more likely to reflect prevailing market conditions than other approaches.¹⁷⁰

221 This has led the AER to adopt a preferred approach to implementing the DGM to minimise its concerns. The AER describes its preferred approach as:

...the most significant development in this area¹⁷¹

and states that it gives:

...significant consideration to DGM estimates of the MRP.¹⁷²

222 The AER has also noted that it is important for it to have regard to information “symmetrically” through time:

...it is important we apply different sources of evidence symmetrically through time to avoid bias...Asymmetric application of evidence may lead to biased outcomes. In contrast, we propose to consider each source of evidence symmetrically through time.¹⁷³

¹⁶⁹ AER (2013), Rate of Return Guideline: Explanatory Statement, Appendices, p. 110.

¹⁷⁰ AER (2013), Rate of Return Guideline: Explanatory Statement, Appendices, p. 85.

¹⁷¹ AER Rate of Return Guideline, Explanatory Statement, Appendices, p. 89.

¹⁷² AER Rate of Return Guideline, Explanatory Statement, p. 97.

¹⁷³ AER (2013), Rate of Return Guideline: Explanatory Statement, p. 92.

and that its preferred DGM specification enables the AER to consider the DGM evidence symmetrically:

...we have greater confidence in the symmetry of this information through time and give these estimates greater consideration than we have in the past.¹⁷⁴

223 Consistent with a symmetric approach to the evidence, the AER has stated in its most recent decisions that:

We have not changed the weight we apply to the dividend growth model.¹⁷⁵

224 In summary:

- a. The AER has stated that the DGM approach has the attractive features of being a forward-looking estimate that is more likely to reflect the prevailing market conditions than other approaches;
- b. The AER has expressed some concerns about the reliability of input parameters, but states that these concerns are mitigated by its preferred implementation; and
- c. The AER applies “significant” weight to its DGM evidence and has not reduced that weight since the Guideline.

7.2 AER concerns

225 In this sub-section, we consider each of the concerns that the AER has documented in relation to the DGM estimates of the MRP. The AER’s four concerns have recently been set out in its May 2016 Final Decisions.

Slow-changing dividends

226 The AER correctly points out that corporate dividends are more stable over time than corporate earnings. Thus, it is possible that a firm may seek to maintain its dividend through a period of weaker earnings. Of course, this is only possible for a short period – if earnings are persistently weak, maintaining the dividend becomes unsustainable. Thus, if a firm is anticipating weaker earnings for a prolonged period, it is highly unlikely that it would *increase* its dividend.

227 On this point, the AER notes¹⁷⁶ our submission that analysts are currently forecasting growth in dividends and earnings over the standard two-year forecast period. This is inconsistent with the notion that dividends are currently being artificially sustained in the face of what is expected to be weak earnings in the future.

228 In response, the AER posits that it is possible that, although analysts are forecasting robust earnings growth over the next two years, they may consider that earnings in the more distant future are likely to be insufficient to sustain the

¹⁷⁴ AER Rate of Return Guideline, Explanatory Statement, p. 96.

¹⁷⁵ AusNet Draft Decision, Attachment 3, p. 207.

¹⁷⁶ AusNet Draft Decision, Attachment 3, p. 206.

current level of dividends.¹⁷⁷ While this is a theoretical possibility, it seems highly unlikely that analysts would forecast dividend growth based on strong earnings over the short term if they considered those dividends to be unsustainable in the longer term. Moreover, the AER has provided no evidence to support its conjecture.

229 The AER also refers to a figure in the RBA Chartpack¹⁷⁸ and concludes that:

RBA data suggests that forecast growth in earnings per share will likely slow over the 2015-16 and 2016-17 financial years.¹⁷⁹

230 The AER appears to have interpreted the figure in question incorrectly. The figure clearly shows that analysts are currently forecasting 2017 earnings to be higher than 2016 earnings and that has been the case for all of the last year.¹⁸⁰

231 Moreover, the ‘sticky dividends’ issue would only be material if future dividends were likely to fall so materially as to make the current dividend unsustainable, and there is no evidence to support that conjecture.

232 Finally, we note that there is no reason to suggest that this issue is any more or less important than at the time of the Guideline.

Bias in analyst forecasts

233 In its recent final decisions, the AER notes that any upward bias in analyst forecasts will result in a higher estimate of the required return on the market. The AER also notes¹⁸¹ our previous submission that any such bias is irrelevant – if analyst forecasts are taken to be an estimate of the market’s expectation of future dividends and the current price is taken to be an estimate of the market’s expectation of the current value, it follows mechanically that the implied discount rate must be an estimate of the market’s required return on equity. The AER’s response on this point is that:

If analysts’ dividend and price forecasts are biased, it is also plausible that the analysts’ implied return on equity is biased.¹⁸²

234 This response seems to miss the point. The AER seems to suggest that the market (proxied by analysts) should have forecasted lower dividends but maintained the same stock price, thus producing a lower implied return. But what we are seeking to estimate is the implied return that equates the dividend forecast that the market actually uses to the actual stock price – not the dividend forecast that the AER thinks the market should have used.

¹⁷⁷ AusNet Draft Decision, Attachment 3, p. 206.

¹⁷⁸ <http://www.rba.gov.au/chart-pack/share-markets.html>.

¹⁷⁹ AusNet Draft Decision, Attachment 3, p. 62.

¹⁸⁰ <http://www.rba.gov.au/chart-pack/share-markets.html>.

¹⁸¹ AusNet Draft Decision, Attachment 3, p. 62.

¹⁸² AusNet Draft Decision, Attachment 3, p. 62.

235 Our previous submission also noted that any analyst forecast bias applied equally at the time of the Guideline, so would not be a reason for now placing less weight on the DGM estimates. The AER's response on this point is:

Frontier has not provided any evidence that bias has not increased.¹⁸³

236 To examine the very recent extent of any analyst forecast bias in Australia, we collected data on 'earnings surprises' for the most recent financial year for the stocks in the ASX 20 index.¹⁸⁴ The earnings surprise is actual earnings per share less forecasted earnings per share, expressed as a percentage. Half of the firms had positive surprises and half had negative surprises and the mean surprise was 2.37%, meaning that actual earnings were slightly *above* the forecast. This high-level evidence is inconsistent with the proposition that forecast earnings are becoming more optimistic over time.

Dividends as a proxy for free cash flow on equity

237 In its recent final decisions, the AER cites a submission from McKenzie and Partington (2014) in relation to the effect of the financing of dividends.¹⁸⁵ McKenzie and Partington posit that if a firm routinely issues new shares,¹⁸⁶ that could affect the long-run dividend growth rate. However, this is already accounted for – the AER already makes a downward adjustment to the long-run growth rate for this effect.

238 Moreover, McKenzie and Partington (2014, p.29) conclude on this point that “it may be less of a problem at the level of the market” which is relevant when the DGM is being used to estimate the MRP.

239 Finally, we note that there is no reason to suggest that this issue is any more or less important than at the time of the Guideline.

Term structure for required return on equity

240 In its recent final decisions, the AER considers the question of a term structure in the required return on equity.¹⁸⁷ The idea is that rather than estimating a single required return on equity, one could assume that investors require a relatively higher return beyond Year 10 and a relatively lower required return before Year 10. The AER cites McKenzie and Partington (2014) on this point:

We do recommend that it be borne in mind that the existence of a term structure could materially change cost of equity estimates from the DGM.¹⁸⁸

¹⁸³ AusNet Draft Decision, Attachment 3, p. 206.

¹⁸⁴ Source: CommSec.

¹⁸⁵ AusNet Draft Decision, Attachment 3, p. 207.

¹⁸⁶ McKenzie and Partington provide a numerical example where a firm does this via a dividend reinvestment plan.

¹⁸⁷ AusNet Draft Decision, Attachment 3, p. 207.

¹⁸⁸ AusGrid Draft Decision, Attachment 3, p. 207.

241 Also relevant is what McKenzie and Partington (2014) said in the passage immediately before the quote selected by the AER:

Furthermore, even if we knew that there was a term structure, we would have the problem of estimating the cost of equity that was to apply to the more distant cash flows. It is a difficult enough problem estimating one cost of equity, without complicating that problem by requiring estimation of another cost of equity to apply at the end of the growth transition period. We therefore agree with SFG (2014d, p. 20) that if a term structure of equity was applied then:

There is the risk that the regulated rate of return varies by substantial amounts over time because of estimation error, associated with whether a term structure exists and the assumption about the long term cost of equity.

Consequently we do not recommend that an estimation technique involving an equity term structure be adopted.¹⁸⁹

242 In its Guideline materials, the AER explained that:

...we do not incorporate a term structure into our model because it is non-standard.¹⁹⁰

243 We note that it remains equally non-standard to impose an assumed term structure when implementing the DGM approach.

Summary and conclusions

244 As set out above, we consider that the four points that the AER has raised in relation to the general reliability of DGM estimates of the MRP are overstated. To the extent that there are concerns about these points, those concerns would have to be weighed up against the strengths and weaknesses of other approaches. For example, the historical excess returns approach:

- a. Is an estimate that reflects the average conditions over the historical period, which may differ from the prevailing market conditions;
- b. Provides different estimates for different historical periods (especially the shorter periods that the AER considers);¹⁹¹
- c. Produces imprecise estimates with wide confidence intervals (especially the shorter periods that the AER considers).¹⁹²

245 Our view is that the various approaches should be compared against each other in terms of their relative strengths and weaknesses. In our view, the historical excess returns approach and the DGM approach have different strengths and

¹⁸⁹ McKenzie and Partington (2014), pp. 36-37.

¹⁹⁰ AER Rate of Return Guideline, Explanatory Statement, Appendices, p. 115.

¹⁹¹ For example, the shortest period that the AER considers in its recent final decisions begins in 1988 and produces an estimate that is materially different from all other estimates. See AusNet Draft Decision, Attachment 3, Table 3-25, p. 198.

¹⁹² For example, our estimate of the historical mean excess return since 1988 is 5.6% within a standard 95% confidence interval of 1.2% to 10.0%.

weaknesses, but they both have something to contribute and both should be afforded material weight. We note that the AER reached the same conclusion in its Guideline.

246 Importantly, none of the issues that the AER has raised in relation to the DGM have changed or intensified since the Guideline, so none of them provide a reason for reducing the weight that has been applied to the DGM approach. These points had already been raised at the time of the Guideline¹⁹³ and did not appear to raise alarm bells for the AER, which stated that:

The DGM method is a theoretically sound estimation method for the MRP. As DGM estimates incorporate prevailing market prices, they are more likely to reflect prevailing market conditions. DGM estimates are also clearly forward looking as they estimate expectations of future cash flows and equate them with current market prices through the discount rate.¹⁹⁴

and:

...we consider DGM estimates have strong theoretical grounding and are more likely to reflect prevailing market conditions than other approaches.¹⁹⁵

247 The AER went on to say that, regardless of the issues raised by Lally (2013) and McKenzie and Partington (2013), it had decided to give:

...significant consideration to DGM estimates of the MRP,¹⁹⁶

and described its development of a preferred approach for implementing the DGM as:

...the most significant development in this area.¹⁹⁷

248 McKenzie and Partington (2014, pp. 27) restate their concerns about slow-changing dividends (or ‘sticky dividends’ as they call it in that report) and potential analyst forecast bias and they recommend against using a term structure for DGM estimates. This report also includes a discussion of the SFG approach of simultaneously estimating the long-run dividend growth rate and required return on equity. However, that issue is not relevant to the AER’s DGM specification.

249 Partington (2015) is an update of the McKenzie and Partington (2014) report. The section on DGM estimation is unchanged from the previous version.

250 Partington and Satchell (May 2015, p. 6) note that they have set out the same concerns about DGM estimates of the MRP in several prior reports and “Consequently we do not spend time recapitulating these points in the current report.”

¹⁹³ When setting out the four issues in Attachment 3 to the AusNet Draft Decision at Footnote 852, the AER cites Lally, M., 2013, *The DGM*, and McKenzie, M. and G. Partington, 2013, *The Dividend Growth Model*.

¹⁹⁴ AER (2013), Rate of Return Guideline: Explanatory Statement, Appendices, p. 84.

¹⁹⁵ AER (2013), Rate of Return Guideline: Explanatory Statement, Appendices, p. 85.

¹⁹⁶ AER Rate of Return Guideline, Explanatory Statement, p. 97.

¹⁹⁷ AER Rate of Return Guideline, Explanatory Statement, Appendices, p. 89.

251 Partington and Satchell (October 2015, pp. 43-44) again restate the concern
about 'sticky dividends,' citing what was said on this point by Partington (2015)
six months earlier.

252 We note that in its recent decisions, the AER states that:

We consider our dividend growth model is theoretically sound but that there
are many limitations in practically implementing this model. We are not
confident that the recent increases in estimates of the market risk premium
from these models necessarily reflect an increase in the 'true' expected ten-
year forward looking market risk premium.¹⁹⁸

253 However, none of the issues that the AER raises relation to the DGM are new or
different since the Guideline. Since the Guideline, the only thing that has
changed in relation to the AER's DGM estimates is that they have become more
and more inconsistent with the AER's allowed MRP of 6.5%. Of course, this
alone is no reason to apply less weight to the DGM evidence and the AER has
stated in its recent decisions that it has not departed from its Guideline approach
to the MRP¹⁹⁹ and that:

We have not changed the weight we apply to the dividend growth model.²⁰⁰

254 Finally, we note that, for the reasons set out in our earlier report,²⁰¹ our view is
that the DGM estimate should be computed without making a downward
adjustment to the long-run GDP growth rate. The AER makes the deduction on
the basis of US evidence that corporate earnings grow at a lower rate than GDP.
However, the relevant academic articles use data that is more than 20 years out of
date. In our earlier report, we show that corporate earnings have in fact *exceeded*
GDP growth over the last three decades.²⁰² This led us to conclude that:

...it is not appropriate to attribute a low growth estimate to market expectations
(on the basis of low growth observed decades ago), and then derive the cost of
equity on the basis of current prices and earnings prospects.²⁰³

255 Thus, any downward adjustment to the assumed growth rate creates a downward
bias in the DGM estimates. So even if there is some degree of upward bias
resulting from the issues set out above, it would have to be offset against the
downward bias that arises from the explicit downward adjustment that the AER
makes to the GDP growth rate.

¹⁹⁸ AusNet Draft Decision, Attachment 3, p. 59.

¹⁹⁹ AusNet Draft Decision, Attachment 3, p. 61.

²⁰⁰ AusNet Draft Decision, Attachment 3, p. 207.

²⁰¹ SFG, 2014, *Alternative versions of the dividend discount model and the implied cost of equity*, May.

²⁰² SFG, 2014, *Alternative versions of the dividend discount model and the implied cost of equity*, May, p. 34.

²⁰³ SFG, 2014, *Alternative versions of the dividend discount model and the implied cost of equity*, May.

7.3 The evolution of the AER's DGM estimates

256 We begin by noting that the DGM approach provides a direct estimate of the required return on the market and the AER's DGM estimates of the required market return have not changed since the Guideline, as set out in Figure 11 above. That is, the estimates have not changed or become extreme – they have remained remarkably stable since the Guideline.

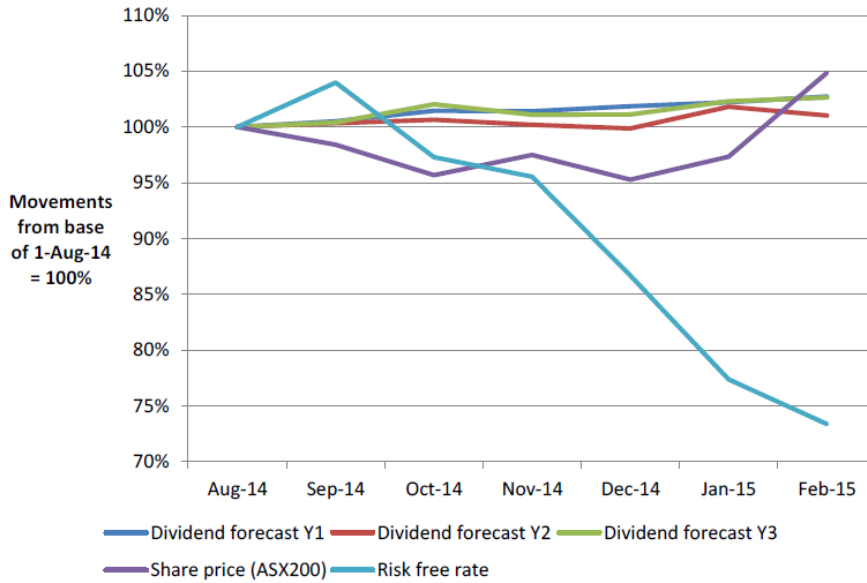
257 The AER then takes its DGM estimates and disaggregates them to separate out an MRP estimate to be inserted into the SL-CAPM formula. This is not part of the DGM – this is how the AER uses the DGM in its foundational model approach. As far as the DGM goes, nothing has changed since the Guideline, which is consistent with the above evidence of stability in investors' required return on equity. In our view, the stability of the DGM estimates does not, in itself, support the notion that the DGM method has become less reliable over time and now warrants less weight.

258 Figure 24 below sets out the AER's disaggregation of its DGM estimate of the MRP. It shows that, in the time since the Guideline forecasted dividends and share prices have both varied by less than 5%. That is, effectively nothing has changed since the Guideline. This is why the DGM estimate of the required return on the market has remained constant, even as government bond yields have fallen materially.

259 We note that this is all consistent with the external evidence set out above, which suggests that the required return on equity has remained constant even as government bond yields have declined.

260 By contrast, Figure 24 is inconsistent with the proposition that the required return on equity has declined one-for-one with the fall in government bond yields. Given that forecasted dividends are essentially constant, a material decline in the required return on equity must result in a material increase in the share price. This is because a lower discount rate would be applied to the same cash flows. However, Figure 24 shows that the share price has remained within 5% of the initial level even though government bond yields have plummeted.

Figure 24: AER decomposition of DGM estimates of the MRP



Source: Ausgrid Final Decision, Attachment 3, p. 3-361.

261

That is, the AER’s Figure 24 above is yet another piece of evidence to support the notion that the required return on equity has remained stable even as government bond yields have fallen. Importantly, this figure shows that nothing has changed materially other than the fall in the risk-free rate. The forecasted dividends have remained stable, share prices have remained stable, and the AER has maintained the same long-run growth rates. As we have shown above, this produces a stable estimate of the required return on equity. The only thing that has changed is that the yield on government bonds that the AER deducts from the estimate of the required return on the market.

8 A current estimate of the MRP

8.1 Instructions

262 In previous submissions, we have proposed that the MRP should be estimated by:

- a. Setting out all of the relevant evidence;
- b. Specifying the relative weight to be applied to each piece of evidence; and
- c. Explaining the reasons why different weight was applied to different pieces of evidence.

263 We remain of the view that this is the only way of showing how the MRP allowance was derived with the appropriate degree of transparency.

264 In this report, we have been asked to follow and update the approach set out in the AER's Guideline insofar as the approach in the Guideline was to:

- a. First form a combined range based on:
 - i. The AER's estimates of the mean historical excess return over various historical periods; and
 - ii. The AER's DGM estimates of the MRP; and
- b. To then select a point estimate that "lies between the historical average range and the range of estimates produced by the DGM."²⁰⁴

265 Specifically, we have been asked to:

- a. Update the historical excess returns range;
- b. Update the DGM range based on the AER's specification and parameter estimates;
- c. Construct the combined range as per the approach adopted in the Guideline; and
- d. Select a point estimate that we consider to be reasonable from within the combined range.

8.2 The range of mean historical excess returns

266 The historical excess returns range is set to 5.5% to 6.5% with a mid-point estimate of 6.0%, as per Figure 10 above.

²⁰⁴ AER Rate of Return Guideline, Explanatory Statement, p. 97.

8.3 The range of DGM estimates

267 The DGM estimate is set by using the AER's most recent DGM estimates of the required return on the market and subtracting the current 10-year government bond yield of 1.9%. The relevant estimates are set out in Table 6 below.

Table 6: Contemporaneous estimates of the MRP from the AER's DGM approach

Growth rate (%)	Two-stage model MRP (%)	Three-stage model MRP (%)
3.8	8.2	8.4
4.6	8.9	9.0
5.1	9.4	9.4

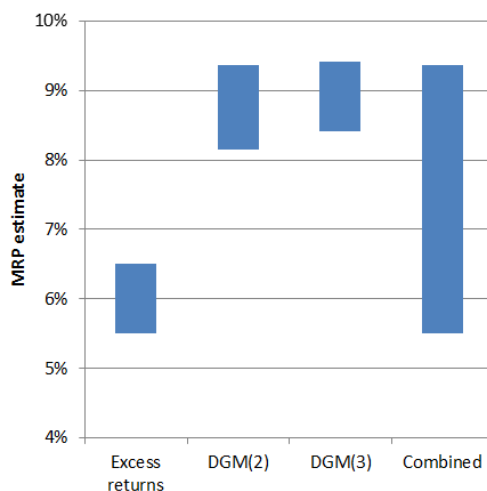
Source: Estimates of the required return on the market are taken from Ausnet Services Draft Decision, Attachment 3, Table 3-26, p. 201 and estimates of the contemporaneous 10-year government bond yield are from the RBA.

268 As set out above, the AER has stated a preference for the three-stage specification. We note that this specification, together with the AER's mid-point estimate of the growth rate, produces a current point estimate of 9.1%. However, we also note that, in the current market conditions, the AER's two-stage model produces estimates of the MRP that are not materially different from the three-stage model.

8.4 The combined range

269 The combined range, based on updated data as at the end of July 2016, is set out in Figure 25 below. The lower bound of the combined range is the 5.5% lower bound of the historical excess returns range and the upper bound of the combined range is the 9.4% upper bound from the AER's DGM approach. We note that the upper bound is currently the same for the AER's two-stage and three-stage DGM approaches.

Figure 25: Current MRP range – AER Guideline approach



Source: Frontier Economics calculations based on estimates set out in the AusNet Draft Decision, Attachment 3.

8.5 The selection of a point estimate from within the range

270 The second step of the AER's Guideline approach is to select a point estimate from within the combined range. In this regard, we note that the AER's Guideline approach is to select a point estimate where:

This point estimate lies between the historical average range and the range of estimates produced by the DGM. This reflects our consideration of the strengths and limitations of each source of evidence.²⁰⁵

271 In its Guideline, the AER adopted a point estimate MRP of 6.5%. The following factors appear to be relevant to the selection of that figure:

- a. The AER's historical excess returns mid-point estimate is 6.0%²⁰⁶ and its mid-point three-stage DGM estimate is 7.1%.²⁰⁷ The mid-point of these two estimates is 6.55%;
- b. The AER adopted an upper bound of 6.5% from its historical excess returns approach and a lower bound of 6.7% from its three-stage DGM approach. The mid-point of this gap between the two ranges is 6.6%;
- c. The AER's historical excess returns range and two-stage DGM range overlapped in the region of 6.1% to 6.5%. The mid-point of this region of overlap is 6.3%;

²⁰⁵ AER Rate of Return Guideline, Explanatory Statement, p. 97.

²⁰⁶ AER Rate of Return Guideline, Explanatory Statement, p. 93.

²⁰⁷ The AER has subsequently stated its preference for the three-stage specification of the DGM. See, for example, JGN Draft Decision, Attachment 3, Appendix C, p. 222.

- d. The combined range adopted by the AER was 5.0% (the lower bound of the excess returns range) and 7.5% (the upper bound of the DGM range). The mid-point of the combined range is 6.3%; and
- e. If the historical excess returns range is based on arithmetic means, consistent with the AER's subsequent decisions, the combined range is 5.7%²⁰⁸ to 7.5%, with a mid-point of 6.6%.

272 In summary, the approach to the MRP that is set out in the AER's Rate of Return Guideline is to rely primarily on the historical excess returns method and the DGM method (particularly the three-stage method) to specify a range for the MRP and to select a point estimate from within that range. Other evidence is considered to be "less informative"²⁰⁹ and is given only "some"²¹⁰ or "limited"²¹¹ consideration.

273 In relation to the current estimates set out above, we note that:

- a. The AER stated that its preferred historical excess returns estimate is 6.0%²¹² and its mid-point three-stage DGM estimate was 9.0%.²¹³ The mid-point of these two estimates is 7.5%;
- b. The upper bound of the AER's historical excess returns approach is 6.5% and the lower bound from the AER's three-stage DGM approach is 8.4%. The mid-point of this gap between the two ranges is 7.5%;
- c. At the time of the Guideline, the AER's historical excess returns range and its two-stage DGM range overlapped. In the current market conditions, the upper bound of the historical excess returns range is 6.5% and the lower bound of the two-stage DGM range is 8.2%. The mid-point of the gap between these two ranges is 7.4%; and
- d. The combined range is from 5.5% (the lower bound of the excess returns range) and 9.4% (the upper bound of the DGM range²¹⁴). The mid-point of the combined range is 7.5%.

274 In summary, we have identified the sorts of considerations that the AER applied when selecting its Guideline MRP of 6.5%. If we apply those same sorts of

²⁰⁸ AER Rate of Return Guideline, Explanatory Statement, p. 93.

²⁰⁹ AER Rate of Return Guideline, Explanatory Statement, p. 96.

²¹⁰ AER Rate of Return Guideline, Explanatory Statement, p. 97.

²¹¹ AER Rate of Return Guideline, Explanatory Statement, p. 97.

²¹² AER Rate of Return Guideline, Explanatory Statement, p. 97.

²¹³ The AER has subsequently stated its preference for the three-stage specification of the DGM. See, for example, JGN Draft Decision, Attachment 3, Appendix C, p. 222.

²¹⁴ Note that the upper bound is currently the same for the AER's two-stage and three-stage DGM approaches.

considerations to the current evidence that the AER has compiled, the result is an estimate of 7.5%.

275 If the MRP is set to 7.5%, the implied market return is 9.4%²¹⁵ which is still more than 10% below the 10.5%²¹⁶ allowed market return at the time of the Guideline. That is, setting the current MRP to 7.5% implies that the required return on equity has reduced materially since the Guideline, but less than one-for-one with the fall in the risk-free rate.

276 An allowed MRP of 7.5% is an outcome that lies between:

- a. The view that the MRP is constant over all market conditions such that the required return on equity rises and falls one-for-one with changes in the risk-free rate; and
- b. The view that the required return on equity has remained stable over the period since the Guideline.

277 In our view, this is a very conservative estimate in light of the weight of evidence set out above – which supports the notion that the required return on equity has not declined materially since the Guideline.

278 Since the Guideline:

- a. The AER's own DGM estimates indicate that the MRP has increased materially;
- b. The AER's own DGM estimates indicate that the overall required return on equity has remained stable; and
- c. There is substantial other evidence, as set out in Section 5 above, that the overall required return on equity has remained stable.

279 In persisting with a 6.5% MRP (such that its allowed return on equity has been reduced by more than 25% since the Guideline) the AER is apparently applying no weight to any of this evidence. In particular, as the AER's own DGM estimates of the required return on equity have remained stable, it has afforded that evidence progressively less weight – reducing the allowed return by more than 25%. As the AER's own evidence has become more and more inconsistent with its proposed regulatory allowances, that evidence has been progressively disregarded. In our view, that approach is unreasonable – the AER's approach of setting the allowed return on equity by adding a fixed premium to the contemporaneous government bond yield is based on assumption rather than evidence.

²¹⁵ 1.9% + 7.5%.

²¹⁶ 4.0% + 6.5% = 10.5%.

8.6 An appropriate forward-looking estimate that is commensurate with the prevailing conditions in the market for equity funds

280 In the previous subsection, we have identified the sorts of considerations that the AER applied when selecting its Guideline MRP of 6.5% and applied those same sorts of considerations to the current evidence that the AER has compiled, producing an MRP estimate of 7.5%. We noted that estimate implies a market cost of equity that is more than 10% below the allowance provided under the Guideline at the time of its publication.

281 In this section of the report, we have been asked to consider whether that 7.5% estimate is supported by all of the current evidence that we consider to be relevant.

282 In doing this, our approach is to make a number of changes to the approach adopted in the previous subsection in order to incorporate all of the evidence that we consider to be relevant to informing the estimate of the MRP.

283 Specifically, in determining whether the 7.5% MRP estimate is an appropriate forward-looking estimate commensurate with the prevailing conditions in the market for equity funds:

- a. Our approach is to adopt a theta of 0.35, commensurate with a gamma of 0.25, when estimating the MRP;
- b. Our approach is to place no weight on the geometric means of historical excess returns because they do not provide an appropriate estimate of the expected return for the purpose of estimating the MRP. This contrasts with the AER's Guideline approach which was to set the lower bound of its primary range for MRP at 20 basis points above the highest geometric mean estimate²¹⁷ and the AER's current approach which is to base its range for historical return estimates on arithmetic averages;²¹⁸
- c. Our approach is to place no weight on historical excess return estimates that use periods that begin in the 1980s because the estimates from such short periods are so imprecise as to be statistically uninformative. This contrasts with the AER's approach, which is to make no distinction between historical excess returns estimates based on their statistical precision or the width of the relevant confidence intervals;
- d. Our approach is to apply the NERA adjustment to better match the dividends paid in the early part of the historical sample – for

²¹⁷ AER Rate of Return Guideline, Explanatory Statement, p. 93.

²¹⁸ AusNet Draft Decision, Attachment 3, p. 59.

the reasons set out in our earlier report²¹⁹ and because those corrected estimates have now been adopted by commercial data vendors.²²⁰

- e. Our approach is to have regard to the Wright approach as an estimate of the MRP, consistent with the way it is used by other regulators, rather than as a return on equity cross-check – for the reasons set out in our earlier report.²²¹
- f. We consider that the historical excess returns and Wright estimates represent two end points of a spectrum. The historical returns approach assumes that the risk premium is constant and that required returns rise and fall one-for-one with changes in the government bond yield. The Wright approach assumes that the required real return is constant and that rises and falls in the government bond yield are offset by falls and rises in the risk premium. Since the truth is likely to lie between these two end points, we would assign material weight to both.
- g. The historical mean return estimates, with the NERA correction and with theta set to 0.35, are set out in Table 7 below. We note that the most precise estimate is 6.5% from the longest available period and that the estimate from 1958 (when data quality improved) is 6.3%. We consider that this evidence conservatively supports an MRP of at least 6.2%, which (with a current government bond yield of 1.9%) implies a required return on the market of only 8.1%.

Table 7: Historical excess return estimates: NERA correction, Theta set to 0.35.

Period	Mean	Standard error
1883-2015	6.5%	1.4%
1937-2015	5.8%	2.2%
1958-2015	6.3%	2.9%

Source: Frontier calculations.

- h. The Wright estimate of the required return on the market is 11.2% without the NERA correction and 11.6% with the NERA correction – in both cases based on a theta of 0.35. With a current government bond yield of 1.9%, the Wright approach produces MRP estimates of 9.3% to 9.7%.

²¹⁹ SFG, 2014, The required return on equity for regulated gas and electricity network businesses, June, pp. 49-52.

²²⁰ Credit Suisse Global Investment Returns Sourcebook.

²²¹ SFG, 2015, The required return on equity for the benchmark efficient entity, February, p. 29 and following.

- i. As set out above, our view is that the historical data supports an estimate somewhere between the excess return and Wright end points on the spectrum. The mid-point between the 6.2% historical excess returns estimate and the 9.7% Wright estimate is 7.95%. Even if we apply twice as much weight to the historical excess returns estimate, the resulting point estimate is 7.4%. Consequently, we conclude that the 7.5% estimate is supported by the historical data.
- j. For the reasons set out in our earlier report,²²² our view is that the DGM estimate should be computed without making a downward adjustment to the long-run GDP growth rate. We also agree with the AER in preferring the three-stage model. Updated results using a theta of 0.35 are set out in Table 8 below. Our preferred estimate is the three-stage estimate with no deduction to GDP growth of 8.9%, implying a required return on the market of 10.8%. We conclude that an estimate of at least 7.5% is supported by the evidence in the table below.

Table 8: DGM estimates: Theta set to 0.35.

Growth rate	Two-stage	Three-stage
3.8%	7.2%	7.5%
4.6%	7.9%	8.1%
5.1%	8.4%	8.5%
5.6%	8.9%	8.9%

Source: Frontier calculations. Data to end July 2016

- k. We note that an MRP estimate of 7.5% implies that the required return on equity across the market has fallen by more than 10% since the Guideline. For the reasons set out in Sections 4 and 5 above, we consider this to be a conservative estimate. For example, we consider that:
 - i. Recent independent expert reports support an MRP of 7.5%;
 - ii. Recent Australian regulatory determinations support an MRP of 7.5%; and
 - iii. The range of evidence set out in Section 5 supports an MRP of 7.5% in that it is inconsistent with a material decline in the cost of equity capital.

²²² SFG, 2014, Alternative versions of the dividend discount model and the implied cost of equity, May.

284 For all of the reasons set out above, we conclude that the current evidence supports an MRP estimate of at least 7.5%. This conclusion, and the above calculations that support it, are based on a theta set to 0.35.

8.7 Adjustments under the AER approach for a change in theta

285 The last issue that we have been asked to consider is the extent to which a change in theta from 0.6 to 0.35 would affect the MRP as estimated in the AER's most recent decisions.

286 As we have noted above, the AER's current approach appears to apply negligible weight to its own DGM estimates. The DGM estimates have increased materially since the Guideline and are now materially inconsistent with the 6.5% MRP allowance that has remained constant since the Guideline. Rather, the AER now appears to rely almost exclusively on the AER's historical excess returns estimates.

287 As we have noted above, the short-run historical excess returns estimates that use data that begins in the 1980s are very imprecise, having relatively high standard errors and confidence intervals that include both 0% and 10%. That is, they are statistically uninformative, which is why we focus on the long-run estimates as in Table 7 above. Those three long-run estimates fall by an average of 15 basis points if theta is changed from 0.6 to 0.35. The estimate based on the full data set falls by only 9 basis points. These changes are insignificant relative to the variation across the estimates that the AER has set out in its recent decisions. For example:

- a. The AER's arithmetic mean historical excess returns estimates vary by 100 basis points;²²³
- b. The AER's three-stage DGM estimates vary by 100 basis points;²²⁴
- c. The AER's two-stage DGM estimates vary by 122 basis points;²²⁵
- d. The difference between the AER's maximum arithmetic mean estimate and minimum DGM estimate is 128 basis points;²²⁶ and
- e. The width of the standard 95% confidence intervals for the historical excess returns estimates are all more than 250 basis points.

²²³ AusNet Draft Decision, Attachment 3, pp. 191-192.

²²⁴ AusNet Draft Decision, Attachment 3, p. 201.

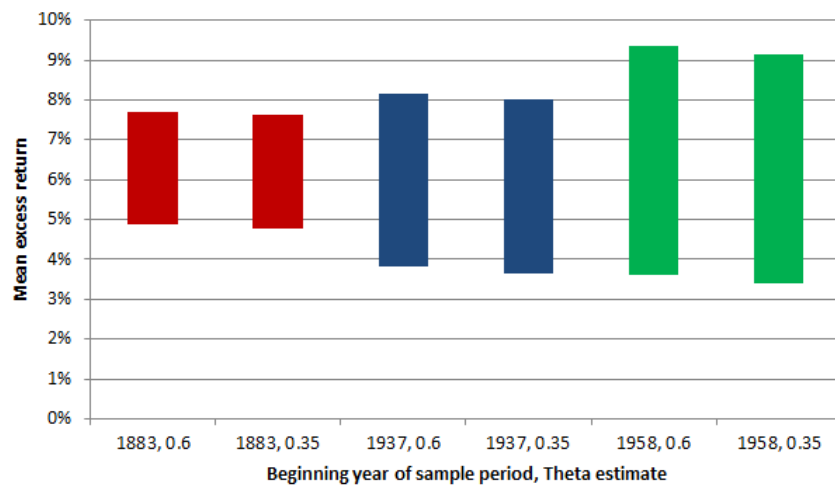
²²⁵ AusNet Draft Decision, Attachment 3, p. 201.

²²⁶ AusNet Draft Decision, Attachment 3, pp. 191-192 and p. 201.

288 In summary, when determining whether, and if so to what extent, a change in the estimate of theta would impact the estimate of the MRP, it is necessary to consider the evidence on which the estimate of MRP was based. In its recent decisions, the AER appears to have based its estimate of the MRP almost exclusively on the historical excess returns evidence. The fact that these estimates are relatively insensitive to the estimate of theta indicates that a change in theta would have a commensurately small impact, if any, on the MRP that is selected.

289 To demonstrate this, Figure 26 below shows the standard 95% confidence intervals for mean historical excess returns estimated over various different sample periods and for different estimates of theta. The figure shows that the change in the estimate of theta is very small, relative to the estimation uncertainty in each case. The discretion and judgment that is applied in distilling the evidence down to a single MRP allowance is orders of magnitude greater than the effect of changing theta.

Figure 26: Historical excess return estimates for different estimates of theta



Source: Frontier calculations.

9 Declaration

290 I confirm that I have *made all the inquiries that I believe are desirable and appropriate and no matters of significance that I regard as relevant have, to my knowledge, been withheld from the Court.*



Professor Stephen Gray

