



Recent evidence on the market risk premium

FINAL REPORT PREPARED FOR AURIZON NETWORK

May 2017

1 Background and context

1 In September 2016, we submitted a report to the QCA titled *The Market Risk Premium*.¹ In that report, we summarised the QCA's approach to estimating the market risk premium (MRP), as set out in the QCA's 2014 Market Parameters Decision. We noted that, having regard to the evidence available in 2014, the QCA determined that an MRP of 6.5% properly reflected the prevailing conditions in financial markets at the time.

2 Our earlier report then identified that estimates from a number of the approaches that the QCA uses to inform its estimate of the MRP have increased materially since 2014. In particular, we showed that between the 2014 Market Parameters Decision and the 2016 DBCT Draft Decision:

- a. The QCA's Cornell estimate had increased from 6.9% to 8.2%; and
- b. The QCA's Wright estimate had increased from 7.4% to 8.9%.

3 We also noted that the QCA acknowledged an error in its calculation of the with-imputation estimate of the MRP from survey evidence, correcting its estimate from 6.2% to 6.8%.²

4 Indeed, we noted that the only estimates that had not increased materially since the Market Parameters Decision were the Ibbotson and Siegel estimates, which are based on very long-term historical averages, and so are incapable of moving materially over the course of a few years.

5 Our earlier report concludes that it would be statistically and economically unreasonable for a decision-maker to reach the same conclusion of an MRP of 6.5% when the evidence had changed so materially in one direction.

6 This is especially the case, given that the QCA has stated that:

...the market risk premium varies over time and its relationship with the risk-free rate likely changes,³

but where the QCA has acknowledged that the effect of its persistent adoption of a 6.5% MRP, even in the face of materially different evidence, is that the MRP has effectively become a:

non-time-variant parameter.⁴

7 In this report, we present new evidence of further material increases to the QCA's Survey and Independent Expert estimates of the MRP. This new evidence adds to the weight of evidence supporting a material increase in the MRP.

¹ Frontier Economics, 2016, *The market risk premium*, September.

² UT4 Draft Decision, p. 232.

³ Market Parameters Decision, p. 81.

⁴ QR Final Decision, June 2016, p. 49.

2 Survey evidence

2.1 The QCA's approach to survey evidence

2.1.1 The QCA's endorsement and use of survey evidence

8 In its Market Parameters Decision, the QCA:

- a. noted that a number of stakeholders had submitted that survey responses suffer from a number of weaknesses and should not be used to estimate the MRP; and
- b. rejected those submissions, concluding that it would continue to rely on survey evidence when estimating the MRP.

9 In this regard, the QCA concluded that:

Aurizon Network, SFG Consulting and QTC were critical of surveys and contended that they suffer from a number of weaknesses. The QCA agrees with the contention that surveys have weaknesses. However, given that the market risk premium is unobservable, all valid methods have both strengths and weaknesses — the QCA considers that surveys remain a useful source of information to inform an estimate despite potential issues of survey design.⁵

10 In our September 2016 report, we maintained our view that survey evidence was unreliable and should not be used,⁶ but we recognised that the QCA has concluded that surveys are “timely, clear and properly reflective of the views of the market.”⁷

2.1.2 The Fernandez surveys

11 The QCA's Market Parameters Decision also considers *which* surveys should be relied upon when estimating the MRP. On this point, the QCA noted that its previous practice had been to rely upon the annual surveys conducted by Spanish academic Pablo Fernandez. The QCA also noted that its advisor supported the use of the Fernandez surveys:

Dr Lally also considered that the Fernandez surveys should be used, as they are timely and report results from other markets⁸

and the QCA concluded that:

the Fernandez surveys contain relevant and useful information.⁹

⁵ QCA, 2014, Market Parameters Decision, p. 64.

⁶ Frontier Economics, 2016, *The market risk premium*, September, Paragraph 95. This remains our view.

⁷ UT4 Draft Decision, p. 231.

⁸ QCA, 2014, Market Parameters Decision, p. 65.

⁹ QCA, 2014, Market Parameters Decision, p. 65.

2.1.3 Timeliness is a key consideration

12 The Market Parameters Decision also notes that a key consideration is the timeliness of a survey¹⁰ and that there was general agreement on this point. For example:

Dr Lally considered that surveys should be timely¹¹

and the Queensland Resources Council proposed that only the most recent (timely) survey should be considered.¹² The QCA concluded that:

The QCA therefore concludes that surveys should be timely and assessed on a case-by-case basis.¹³

2.1.4 Use of the median survey response

13 Having decided that the most recent (timely) Fernandez survey should be used, the only remaining question was whether the mean or median of the survey responses should be considered. On this question, the QRC submitted that the median should be used:

...the QRC contended that, although subject to limitations, surveys provide useful information on the market risk premium. The QRC noted that the most recent Fernandez survey reports a mean estimate of 6.8% and a median estimate of 5.8%. The QRC argued that the 6.8% was clearly driven by an outlier, where one respondent had provided an estimate of 25.0%. For this reason, the QRC contended that the median of 5.8% should be used and noted that the median was lower in 2013 (5.8%) than in 2012 (6.0%) (QRC, 2013b: 14; 2014: 8).¹⁴

14 The QCA agreed that the median of the most recent Fernandez study should be used:

As discussed, the most timely and relevant Fernandez survey is the Fernandez, Aguirreamalloa and Linares (2013) survey, which reports mean and median estimates of 6.8% and 5.8% respectively. In relation to this survey, the QCA agrees with the QRC that it is not appropriate to use the mean.¹⁵

2.1.5 Adjustment for dividend imputation tax credits

15 In its Market Parameters Decision, the QCA noted that (as for every method) the survey estimate of the MRP must be grossed-up to include the QCA's estimate of the value of imputation credits. In its Market Parameters Decision, the QCA

¹⁰ QCA, 2014, Market Parameters Decision, p. 63, 64, 65.

¹¹ QCA, 2014, Market Parameters Decision, p. 64.

¹² QCA, 2014, Market Parameters Decision, p. 64.

¹³ QCA, 2014, Market Parameters Decision, p. 65.

¹⁴ QCA, 2014, Market Parameters Decision, p. 64.

¹⁵ QCA, 2014, Market Parameters Decision, p. 66.

erroneously calculated the grossing-up to amount to 0.18%, but corrected this to 0.83% in its UT4 Draft Decision.¹⁶

2.1.6 Summary of the QCA approach to survey evidence

- 16 In summary, in its Market Parameters Decision, the QCA decided that:
- a. It would use survey responses to inform its estimate of the MRP;
 - b. It would use the Fernandez surveys;
 - c. It would use the most recently available (timely) survey;
 - d. It would use the median estimate; and
 - e. It would adjust the estimate to include its estimated value of dividend imputation tax credits.

17 The QCA confirmed this view in its UT4 Draft Decision:

The third method we have used to inform our final estimate of the market risk premium is survey evidence. This approach attempts to estimate the future market risk premium on the basis of survey responses from relevant participants. These can include individual and institutional investors, valuation experts, financial analysts, company managers and academics.¹⁷

18 The QCA again endorsed the Fernandez surveys and concluded that:

...our judgement is that the surveys are well-established, consistent and comprehensive.¹⁸

19 The QCA also noted that the QRC had submitted that the most recently available survey should be used:

The QRC submitted that for survey evidence: updated survey evidence from the Fernandez annual survey supports a mean of 5.9% and a median of 6.0% for Australia.¹⁹

2.2 The Fernandez 2017 survey

20 An updated Fernandez survey was released in April 2017.²⁰ This new survey is clearly the most timely of the available surveys.

21 The Fernandez (2017) survey reports that:

¹⁶ UT4 Draft Decision, p. 232.

¹⁷ QCA, 2014, UT4 Draft Decision, p. 231.

¹⁸ QCA, 2014, UT4 Draft Decision, p. 231.

¹⁹ QCA, 2014, UT4 Draft Decision, p. 231.

²⁰ Fernandez, P., V. Pershin and I.F. Acin, Discount rate (risk-free rate and market risk premium used for 41 countries in 2017: A survey, ssrn.com/abstract=2954142.

- a. **The median MRP for Australia is 7.6%** and the mean is 7.3%. We focus on the median to be consistent with the approach adopted by the QCA and recommended by the QRC;²¹
- b. **The mean reported MRP increased between 2015 and 2017 for the vast majority of countries represented in the survey.** Out of the 41 countries in Table 6, the mean MRP estimate increased for 31 and decreased for 10.²² Of the 10 countries for which the MRP estimate decreased, 9 are developing markets. This indicates that an increase in the reported MRP for Australia is in line with the results for other markets and particularly other developed markets;
- c. **The standard approach of survey respondents is to pair the MRP estimate with a risk-free rate above the prevailing government bond yield.** The authors take the 10-year government bond yield as a standard benchmark and show that respondents are pairing their MRP estimates with a risk-free rate above the benchmark rate.²³ For Australia, the average risk-free rate adopted by respondents is 3.0%, whereas the yield on 5-year government bonds during March 2017 (when the survey was conducted) was 2.3%.²⁴ Fernandez (2017) reports that the average return on the market used for Australia is 10.3%.²⁵ Since the QCA approach is to add the MRP to the prevailing government bond yield matching the term of the regulatory control period, the implied MRP is 8.0%. That is, the same estimate of the market return of 10.3% would be obtained by:
 - i. Adding an MRP of 7.3% to a risk-free rate of 3.0%; or
 - ii. Adding an MRP of 8.0% to the prevailing risk-free rate of 2.3%.

It would be wrong to conclude that the Fernandez (2017) survey supports an approach whereby an MRP of 7.3% is added to the prevailing risk-free rate of 2.3%. The survey indicates that respondents do not do that. Rather, given that a prevailing risk-free rate is to be used, the survey indicates that an MRP of 8.0% must be added to it to produce the return on the market that the respondents are currently using.

²¹ Fernandez et al (2017), Table 2, p. 3.

²² Fernandez et al (2017), Table 6, p. 7.

²³ Fernandez et al (2017), Table 8, p. 9. The median return on the market is not reported.

²⁴ Source: Reserve Bank of Australia.

²⁵ Fernandez et al (2017), Table 7, p. 8.

- d. **As with prior surveys, the estimates would have to be adjusted to reflect the value of dividend imputation tax credits that is assumed by the QCA.** (It would certainly be quite unreasonable to suggest that survey respondents had already adjusted their MRP estimates to reflect a gamma of 0.47 so as to be consistent with the QCA's other MRP estimates). Under the QCA's approach, such an adjustment would involve the addition of approximately 80 basis points.

22 In summary:

- a. The median and mean MRP estimates for Australia reported by Fernandez (2017) are **7.6%** and **7.3%**, respectively;
- b. The relevant estimate increases to **8.0%** when adjusting for the extent to which those estimates are paired with a risk-free rate above the prevailing government bond yield (i.e., it would be disingenuous to interpret those estimates as being used in the CAPM formula with the prevailing 5-year government bond yield when the clear intention of survey respondents is to the contrary); and
- c. The relevant estimate increases further to **8.8%** when making the QCA's adjustment for its assumed value of dividend imputation tax credits.

2.3 Conclusion in relation to survey evidence

23 Our view remains as set out in our report of September 2016 – we consider the Fernandez survey evidence to be unreliable and recommend that no weight should be applied to it. However, given that the QCA has consistently rejected that submission, and does use the Fernandez surveys to inform its MRP estimate, the most recent timely estimates must be used. However one interprets the Fernandez (2017) results, it is clear that there is a material increase in the MRP relative to previous QCA decisions.

3 Independent expert valuation reports

3.1 The QCA's approach to independent expert valuation reports

24 In our September 2016 report we noted that in its UT4 Draft Decision, the QCA agreed with our suggestion to consider MRP estimates in independent expert valuation reports that are prepared in conjunction with major corporate transactions.²⁶ At the QCA's request, we provided it with a set of 29 reports. It is agreed between us and the QCA that, across those reports, the mean is 6.4% and the median is 6.0%, excluding imputation credits.²⁷

25 We also submitted that, for this data set, the mean is a more appropriate and reflective estimate than the median. As well as being the median estimate, 6% is also the *minimum* estimate. None of the reports that were evaluated by the QCA adopts an estimate below 6%, but 41% of them adopt an estimate above 6%, as set out in Table 1.

Table 1. Independent expert report estimates of ex-imputation MRP

Estimate	Frequency
6%	59%
7%	14%
6-7%	3%
6-8%	24%

Source: Independent expert reports

26 The QCA dismisses this point in the following sentence:

...we consider that the more appropriate statistic is the median, to eliminate the influence of outliers in this small sample.²⁸

27 However, there are no outliers in this data set in the sense that every single mid-point estimate is within the narrow range of 6-7%.

28 For the reasons set out above, our view is that characterising this evidence as supporting an (ex-imputation) MRP of 6% is misleading, but we recognise that this is the conclusion that the QCA has reached.

²⁶ UT4 Draft Decision, p. 232.

²⁷ UT4 Draft Decision, p. 232.

²⁸ DBCT Draft decision, p. 232.

29 The QCA then grosses-up this estimate to incorporate its assumed value of imputation credits, resulting in a with-imputation estimate of 6.8%.²⁹

3.2 Updated independent expert report evidence

30 We note that the set of independent expert reports previously considered by the QCA has become more dated and less timely with the passage of time. Consequently, we have conducted a search for independent expert valuation reports that were released since 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 2 below.

Table 2: Recent independent expert valuation reports

Company name	Independent expert	Report date	Transaction value (\$ millions)
Ethane Pipeline Income Fund	Lonergan Edwards ³⁰	31/03/2016	122
Pacific Brands Ltd	Grant Samuel ³¹	20/05/2016	1,055
Patties Foods Ltd	Deloitte ³²	15/07/2016	197
STW Communications Group Ltd	KPMG ³³	29/02/2016	338

Source: Connect 4.

31 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:

- 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.

32 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

²⁹ UT4 Draft Decision, p. 232.

³⁰ Lonergan Edwards, 2016, Independent Expert Report on Ethan Pipeline Income Fund, April.

³¹ Grant Samuel, 2016, Independent Expert Report on Pacific Brands Ltd, May.

³² Deloitte, 2016, Independent Expert Report on Patties Foods Ltd, July.

³³ KPMG, 2016, Independent Expert Report on STW Communications Group Ltd, March.

implausible in the prevailing market conditions, and makes a material upward adjustment.

33 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.³⁴

34 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.³⁵

35 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 3 below.³⁶

Table 3: 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.

36 The evidence in Table 3 is that independent experts are using estimates of the required return on equity that are materially higher than those being allowed by the QCA’s approach of adding a fixed 6.5% premium to the prevailing government bond yield. In our view it would be inconsistent and wrong to consider the quoted MRP estimates from the independent experts and to ignore the fact that, when

³⁴ Lonergan Edwards, 2016, p. 47.

³⁵ KPMG, 2016, p. 85.

³⁶ 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.

implementing the CAPM, those estimates are being paired with a risk-free rate that is materially higher than the risk-free rate used by the QCA.

37 Moreover, the MRP figures set out in Table 3 are ex-imputation estimates. Consequently, before they can be compared to the QCA's 6.5% allowance, they must be grossed-up to reflect the QCA's assumed value of imputation credits, and the QCA has concluded that this adjustment requires the addition of approximately 80 basis points.

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

...without adjustment for imputation.³⁷

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.³⁸

39 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 QCA's 6.5% allowance, in which case the required return on equity is materially higher than the QCA's allowance.

40 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 QCA's allowance.

3.3 Conclusion in relation to independent expert valuation reports

41 As set out in our September 2016 report, our view is that if survey evidence is to be incorporated into the QCA analysis, we consider that the evidence provided by a survey of independent expert reports is more credible than survey estimates compiled from a poll of academics and market practitioners.

42 The respondents to the poll do not need to justify their response, and it is unclear whether their responses pay particular attention to market conditions at the point in time. In contrast, the valuations provided by independent expert reports generally reflect market prices, so the joint expectations embedded in cash flow projections and discount rates will be a better approximation of market expectations than a poll.

³⁷ Lonergan Edwards, 2016, p. 45.

³⁸ Grant Samuel, 2016, p. 11.

- 43 The new evidence set out above demonstrates that independent experts are currently using market returns that are (on average) 7.9% higher than the prevailing government bond yield. These estimates expressly do not reflect any assumed benefit of imputation credits. Adding the QCA's imputation credit adjustment of 80 basis points results in an MRP estimate of 8.7%. This is a material increase to the MRP relative to previous QCA decisions.

4 Conclusion

44 In our September 2016 report, we demonstrated that the QCA's Cornell and
Wright estimates of the MRP had risen materially since 2014 when the QCA
adopted an MRP of 6.5%.

45 In this report, we show that Survey and Independent Expert estimates of the MRP
have also risen materially since 2014, and even since more recent QCA decisions.

46 The only remaining estimation approaches are the Ibbotson and Siegel approaches,
which are based on very long-term historical averages, and so are incapable of
changing materially over time.

47 Thus, all of the QCA's methods that are capable of changing to reflect the
prevailing market conditions now indicate a materially higher MRP since the QCA
first adopted the 6.5% figure.

48 Our view is that it would be statistically and economically unreasonable for a
decision-maker to reach the same conclusion of an MRP of 6.5% when the
preponderance of evidence had changed so materially in one direction.

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