Recommendation to the New Zealand Commerce Commission on whether or not it should change its previous estimate of the tax-adjusted market risk premium as a result of the recent global financial crisis[1]

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[1] The views expressed in this report are strictly those of the authors and do not necessarily represent the views of any organisation. The authors thank Commission staff for help in recording and assembling the authors' arguments and opinions.

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Overview

1. We have been engaged by the New Zealand Commerce Commission (Commission) to advise whether the Commission should change its previous estimate of the tax-adjusted market risk premium (TAMRP) as a result of the recent global financial crisis (GFC).[2] We advised the Commission on this and other matters in our Expert Panel Report.[3]

2. The Expert Panel agrees that, as a result of the recent GFC, the market risk premium in the classical CAPM (MRP) and the TAMRP are likely to have increased at least temporarily. The Expert Panel made the following recommendations:

    - Professors Franks and Myers maintained the view that more weight should be placed on backward-looking estimates. Professor Myers believes that long-term historical averages deserve more weight now than before the GFC.

    - Dr Lally favours equal weight on a range of estimation methodologies including forward and backward-looking estimates.

    - Professor Myers recommends that the Commission sets a range for the MRP. The bottom of the range for the MRP should be 5%. The top of the range should be a long-term historical arithmetic average MRP over long-term government bond returns. This range for the MRP implies a range for the TAMRP. The Commission should use the top of the range for the TAMRP until the world economy returns to normalcy and stable growth.

    - Professor Franks recommends that the Commission consider a small increase of ½% to 1% to the TAMRP estimate but it would take the form of a temporary surcharge.

    - Dr Lally recommends that the Commission does not make a change in the TAMRP estimate as a result of the GFC.

Previous views and recommendations

3. The Commission's current view is explained in its Revised Draft Guidelines and Input Methodologies Discussion Paper.[4] The Commission decided to use the Simplified Brennan-Lally CAPM model when estimating regulated suppliers' cost of equity. One of the consequences of this is that the Commission estimates a TAMRP as opposed to an unadjusted Market Risk Premium (MRP) used in the classical CAPM.

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[2] As published in Commerce Commission, 2009, *Revised Draft Guidelines: The Commerce Commission's Approach to Estimating the Cost of Capital* Available at http://www.comcom.govt.nz//IndustryRegulation/Part4/ContentFiles/Documents/Revised%20Draft%20Guidelines0.pdf.

[3] J. R. Franks, M. Lally and S. C. Myers, 2008, *Recommendations to the New Zealand Commerce Commission on an Appropriate Cost of Capital Methodology*. Available at http://www.comcom.govt.nz//IndustryRegulation/Part4/ContentFiles/Documents/Expert%20panel%20report%20(2)%20(2).pdf.

[4] Available at http://www.comcom.govt.nz//IndustryRegulation/Part4/ContentFiles/Documents/IM-final0.pdf

4. Also as outlined in the Commissions' Input Methodologies Discussion Paper (paragraphs 8.140 to 8.147), the Commission currently intends to estimate regulated firms' weighted average cost of capital for a price setting period of up to five years. This implies that some parameters, including the TAMRP, may be locked down for a period of up to seven years.[5]

5. In its Revised Draft Guidelines and Input Methodologies Discussion Paper (paragraphs 164 and 8.54, respectively), the Commission estimated the TAMRP to be 7%. This translates into an MRP, as used in the context of the classical CAPM model of approximately 5%.[6]

6. Our Expert Panel Report recommended that:

    a. the Commission should continue to draw on international estimates of the market risk premium;
    b. the Commission should retain its approach of examining both forward-looking and backward-looking estimates of the market risk premium;
    c. Professors Myers and Franks recommend that primary weight be placed on backward-looking approaches, but agree that backward-looking estimates may require attenuation. Professor Franks placed somewhat more weight on forward-looking techniques than does Professor Myers;
    d. Dr Lally favoured equal weight over a wide range of estimation methods including forward and backward-looking methods; and
    e. the Panel considers that the Commission's present TAMRP estimate of 7% (for the simplified Brennan-Lally CAPM) is reasonable.

Summary of Expert Panel Discussion

Market Risk Premium before and after the recent GFC

7. Professor Franks, Dr Lally and Professor Myers, hereafter collectively referred to as the Expert Panel, are in agreement that, as a result of the recent GFC, the market risk premium is likely to have increased at least temporarily. This is because of increased levels of financial market volatility and investors' perception of the world as a much riskier place.

8. However, the Expert Panel was unsure as to how long these increased levels of the market risk premium would persist into the future. Professor Franks noted that, after a period of rapid revaluation of asset prices in late 1987 (also referred to as 'Black Monday'), financial market volatility decreased rapidly, within around 13 weeks, after the event. However, in more recent years, he considered that shocks to financial market volatility have tended to persist over longer periods of time.

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[5] Such an approach would provide businesses with a definitive statement on the cost of capital that they could expect to receive under all instruments covered by Part 4, and as such can be considered consistent with the overall purpose statement for input methodologies, as outlined in s 52R of the Act.

[6] The MRP is related to the TAMRP by using the formula MRP = TAMRP – $R_f(T)$, where R_f is the risk free rate of return and T is the investor tax rate. Assuming a post-GFC risk free rate of return of 5.4% and an investor tax rate of 30%, a TAMRP of 7% corresponds to a MRP of 5.4%. Assuming a pre-GFC risk free rate of return of 7% and an investor tax rate of 30%, a TAMRP of 7% corresponds to a MRP of 4.9%.

9. Professor Myers commented that, since the height of the recent GFC approximately one year ago, financial market volatility has decreased markedly and asset prices have recovered. However, Professor Myers considered that investors still face unusually high macro economic uncertainty. Professor Myers believes that the MRP remains above its long-term historical average.

The possibility of temporarily increasing the estimate of the Market Risk Premium

10. Professor Franks commented that it would be unfortunate if the TAMRP estimate were locked down for a period of up to seven years. Professor Franks favoured an approach where the regulator has the ability to review the TAMRP estimate on a more frequent basis.

11. In this context, Professor Franks mentioned the possibility of the Commission temporarily increasing its TAMRP estimate in light of the recent GFC and reverting back to the long-term-historical level once the effects of the crisis have ceased. Professor Franks suggested a small increase of ½ to 1% as a temporary surcharge until the crisis had ceased.

12. Professor Franks suggested that the term structure of implied volatility from index options is useful to give some indication as to the level of uncertainty and the degree of expected mean reversion. Professor Franks also suggested that it would be worth looking at the term structure of volatility for utilities just to see how the market is pricing uncertainty for utility stocks. Although this is not directly related to the market risk premium it may indicate how the level of market uncertainty is affecting utilities.

13. Dr Lally responded that updating the TAMRP estimate to reflect temporary changes in market volatility would require a robust estimation technique to determine both the magnitude of the change to the TAMRP and the speed of reversion back to the earlier level. Dr Lally mentioned that quantitative models (for example as proposed by Merton[7]) could potentially be used for these purposes. However, there would be serious questions around the reliability of any such model and its parameter values. The alternative was to use judgement, but Dr Lally was wary about doing so because of the inevitable lack of transparency in such a process. Dr Lally also thought that desisting from making such temporary adjustments to the TAMRP, in view of the problems noted here, would not necessarily prevent regulated firms from earning their cost of capital over the life of their investments because periods in which the TAMRP estimate was temporarily understated (through not temporarily raising the estimate) would tend to be offset by periods in which the TAMRP was temporarily overstated (through not temporarily lowering the estimate). On this basis, Dr Lally does not favour a change in the TAMRP estimate as a result of the GFC.

14. Professor Franks highlighted that there is not a robust model for measuring the levels of the market risk premium or the changes, and stated that the absence of such models should not constrain us from making changes where necessary when reviewing the estimate for the market risk premium on a regular basis. Rather, Professor Franks suggested that the Commission would need to use its judgement to determine any change in the market risk premium estimate. Professor Franks did not provide a model to determine how to identify when to make any changes in the estimate for the market risk premium, but rather would

[7] This refers to: Merton, R., 1980, *On Estimating the Expected return on the Market. An Exploratory Investigation*, Journal of Financial Economics, vol. 8, pp. 323-361.

rely on a combination of data such as implied market volatility from index options, credit spreads and other macro economic indicators.

15. Professor Myers's first suggestion was to attach a temporary surcharge on the estimate for the market risk premium, for a possible period of two years, in order to accommodate the current situation. However, on reflection Professor Myers was reluctant to endorse a "fudge factor". Professor Myers doubted whether any adjustment could be estimated from shifts in market volatility, regardless of whether measured with a lag or with implied volatilities from options.

16. Professor Myers's second suggestion was to set a range for the MRP and hence a range for the TAMRP. The bottom of the range for the MRP should be 5%. The top of the range should be a Dimson, Marsh and Staunton[8] long-term historical arithmetic average MRP over long-term government bond returns. He recommended that the top of the range should be selected until the world economy returns to normalcy and stable growth.

17. Dr Lally argued that a possible difficulty with this suggestion is that this range for the MRP, and also the TAMRP, would now be quite narrow. Using the latest Dimson, Marsh and Staunton data[9] Dr Lally estimated the top of this suggested range for the MRP would be 5.7%[10], and therefore the range would be from 5.0% to 5.7%. Using New Zealand government ten year bond yields (averaged over January 2010) Dr Lally converted this MRP range into a range for the TAMRP from 6.8% to 7.5% with the upper bound of 7.5% exceeding the currently employed estimate of 7.0% by only 0.5%.

18. The Expert Panel agreed that if the Commission were to review the TAMRP estimate on a regular basis, it would be important that any changes to the TAMRP estimate would have to be symmetrical. Therefore, any temporary increase to the TAMRP estimate for events that significantly increased the volatility should be followed by a decrease (this could be gradual) in the TAMRP estimate back to its earlier level once volatility had returned to normal. Likewise, the TAMRP estimate should be lowered in times of low volatility, followed by reversion back to the earlier level.

19. Dr Lally commented that suppliers of regulated services would be likely to support an increase in the TAMRP estimate in times of higher volatility but would be likely to resist reversion back to the earlier level as volatility declined, and also to resist reducing the TAMRP estimate in times of lower volatility. Users of regulated services would be likely to exhibit the opposite behaviour. The net effect of these pressures is likely to be stronger in respect of upward adjustments, which could potentially give rise to asymmetry in the TAMRP estimate adopted by the Commission.

20. Professor Franks responded that some UK regulators (making special reference to Ofcom[11]) had decreased their MRP estimate during the early part of the 2000's, and increased it thereafter.

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[8] Dimson, E., P. Marsh and M. Staunton, 2002, *Triumph of the Optimists: 101 Years of Global Investment Returns*, Princeton University Press, New Jersey.
[9] Dimson, E., P. Marsh and M. Staunton, 2010, *Global Investment Returns Sourcebook 2010*, Credit Suisse and London Business School.
[10] The results for individual markets range from 3.3% to 9.2%, with New Zealand at 5.5% and the median is 5.7%.
[11] Ofcom is the independent regulator and competition authority for the UK communications industry.

Backward-looking versus forward-looking estimates of the Market Risk Premium

21. The Expert Panel agreed that estimating the market risk premium using historical data (backwards-looking) and forward looking models will provide different results.

22. They agreed that historical (backwards-looking) estimation techniques, like Ibbotson,[12] do not pick up short-term shocks very quickly, and to the extent that they do recognise them, they will (wrongly) result in lower estimates of the market risk premium as a result of the GFC.

23. Professors Franks and Myers maintained the view expressed by them in the Expert Panel Report, that more weight should be placed on backward-looking estimates.[13]

24. Dr Lally favoured equal weight on a range of estimation methodologies including forward and backward-looking estimates. As a result of the GFC, forward-looking estimation techniques should provide a higher estimate of the market risk premium, but this will significantly underestimate any short-term rise in the market risk premium because the methodology assumes the same estimate applies to all future years.

25. The panel agreed that these forward-looking models are problematic to apply. However, Dr Lally considered that their drawbacks are not clearly greater than those for backward-looking estimates (which are subject to a quite different set of problems including significant statistical error and possible bias if the market risk premium has changed over time).

Adjustments to backward-looking models

26. The Expert Panel highlighted that the Ibbotson-type MRP estimates based on historic long-run data have previously been thought of as being too high. This resulted in further analysis around the MRP and led to the development of lower MRP estimates by Dimson, Marsh and Staunton[14]. One such lower MRP estimate uses a downward adjustment for long-term trends in dividend yields.

27. Professor Myers indicated that investors in the 1990s and early 2000s became more and more confident that market risk premiums had declined. However, the GFC has undercut this confidence. Professor Myers believes that long-term historical averages may now be the best starting-point for estimating the market risk premium.

28. Dr Lally agrees that unadjusted Ibbotson-type estimates may have been too high relative to the MRP immediately before the GFC because past levels of the MRP may have been higher than the level immediately before the GFC (due to higher past market volatility). However, attempts to adjust for this are problematic; for example, the reduction in

[12] Ibbotson methodology refers to the methodology used by Ibbotson Associates (now Morningstar) in their "Cost of Capital Yearbook" (published each year) to estimate the MRP. Dimson, Marsh and Staunton also report long-term historical averages.
[13] See recommendation 23 in Franks, Lally and Myers, 2008, *Recommendations to the New Zealand Commerce Commission on an Appropriate Cost of Capital Methodology,* pp. 21–22, para 79–86.
[14] For the arguments and examples of these adjustments see Dimson, E., P. Marsh and M. Staunton, 2002, Triumph of the Optimists: 101 Years of Global Investment Returns, Princeton University Press, New Jersey.

dividend yields must be at least partly due to the apparent increase in earnings retention rates. Accordingly, Dr Lally does not favour explicit adjustment to Ibbotson-type estimates to account for perceived declines in the MRP over time. Instead Dr Lally favours consideration of a wide range of alternative approaches, including forward-looking approaches (which are not subject to the problem in question here although they are subject to other difficulties) and the Siegel[15] approach (which adjusts the Ibbotson-type estimate downwards to account for unexpected inflation in the second half of the 20th century).

Panel Recommendations

Market Risk Premium before and after the recent GFC

29. The Expert Panel agrees that, as a result of the recent GFC, the MRP and the TAMRP are likely to have increased at least temporarily.

Changing the estimate of the Market Risk Premium

30. Professor Myers recommends that the Commission sets a range for the MRP. The bottom of the range for the MRP should be 5%. The top of the range should be a long-term historical arithmetic average MRP over long-term government bond returns. This range for the MRP implies a range for the TAMRP. The Commission should use the top of the range for the TAMRP until the world economy returns to normalcy and stable growth.

31. Professor Franks recommends that the Commission consider a small increase of ½% to 1% to the TAMRP estimate but it would take the form of a temporary surcharge.

32. Dr Lally recommends that the Commission does not make a change in the TAMRP estimate as a result of the GFC.

Backward-looking versus forward-looking estimates of the Market Risk Premium

33. Professors Franks and Myers maintained the view expressed by them in the Expert Panel Report, that more weight should be placed on backward-looking estimates. Professor Myers believes that long-term historical averages deserve more weight now than before the GFC.

34. Dr Lally favours equal weight on a range of estimation methodologies including forward and backward-looking estimates.

[15] Siegel, J., 1992, *The Equity Premium: Stocks and Bond Returns since 1802*, Financial Analysts Journal, Jan-Feb, pp. 28–38.