Telstra's WACCs for Network ULLS and the ULLS and SSS Businesses

A Reply to A/Prof Neville Hathaway "Review of Reports by Prof. Bowman"

Prepared for Telstra

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1. INTRODUCTION

1 I have been asked by Telstra Corporation Limited ("**Telstra**") to prepare a reply to the major points raised by A/Prof Neville Hathaway in his "Review of Reports by Prof. Bowman". My reports that A/Prof Hathaway reviews are cited in his report, section B. These reports have to do with the appropriate Weighted Average Cost of Capital ("**WACC**") for Telstra's Unconditioned Local Loop Service Network ("**ULLS-Network**") and for Telstra's Unconditioned Local Loop Service ("**ULLS**") and Spectrum Sharing Service ("**SSS**"), both for the three financial years 2005/06 through 2007/08.

2 I am instructed that Telstra considers the information in this statement confidential. I have prepared this statement on the assumption that the information and documents referred to herein will remain confidential and that the information and documents will only be disclosed to a person:

    (a) who has executed a confidentiality undertaking in terms that are satisfactory to Telstra; and

    (b) who may only use the documents and the information for the following purposes:

        (i) making submissions to the Australian Competition and Consumer Commission ("**ACCC**") in respect of the Access Undertakings and the public consultation under s 152AQB(5); or

        (ii) any application made to the Australian Competition Tribunal under s152E of the Trade Practices Act for review of a decision made by the ACCC in respect of any of the Access Undertakings; or

        (iii) any other purpose approved by Telstra in writing.

3 My qualifications and experience have been set out in my previous reports.

2. OVERVIEW OF THE REPORT

4 A/Prof Hathaway organises his report in the order of the tables in my reports. This is a sensible approach and I will organise my responses in the order of his report.

5 A/Prof Hathaway disputes some of my parameter estimates and accepts others. In addition, some of his differences with my reports are important to the estimation of WACC, whilst others are not significant to the estimation of WACC and/or are not relied upon by him in developing his opinion on the parameter values. In this reply to his report, I focus upon the issues that are significant to the estimation of WACC. As a result, this report is not a comprehensive treatment of the estimation of WACC, nor is it a comprehensive response to every point raised by A/Prof Hathaway. Where I do not specifically address a point made by A/Prof Hathaway, it should not be inferred that I agree with his opinion.

6   The ULLS Network is the underlying copper customer access network. The assets of the ULLS and SSS service businesses primarily comprise Information Technology systems costs. A/Prof Hathaway apparently accepts a basic premise of my reports that it is appropriate to calculate and apply different WACCs for the ULLS Network and the ULLS and SSS services.

7   As in my reports and as is standard in Australian regulation, A/Prof Hathaway uses the Capital Asset Pricing Model ("**CAPM**") to estimate the cost of equity capital, which is a part of the estimation of WACC.

8   An important difference between ULLS-Network and ULLS/SSS services is that the network assets are very long lived, whilst the software assets have relatively short lives. For purposes of estimating WACC parameters, I use a 10-year time horizon for the network assets and 5-year horizon for the software assets. Given the importance of internal consistency, this difference in useful asset lives impacts upon the estimation of a number of WACC parameters; specifically the risk free rate, market risk premium, debt risk premium, debt issuance costs, and equity issuance costs.

9   A/Prof Hathaway recognises the difference between useful lives of the network and software assets, but does not consistently reflect the difference in his analysis. I will comment on this as necessary in the following sections.

10   The correct time frame for the estimation of the WACC is at the beginning of the useful life of the relevant assets when the consequential opportunity cost is triggered. I have been advised that the cost modelling applies essentially a new, updated asset base at the beginning of each year of the undertaking. Consequently, for consistency I calculate a WACC as at the beginning of each year of the undertaking. My reports that are reviewed by A/Prof Hathaway are with respect to undertakings for the three financial years 2005/06, 2006/07 and 2007/08.

11   For the financial year 2005/06, I estimate WACC as at the beginning of the year, which is as of the opening of business on 1 July 2005. The following two years are in the future, so I applied contemporary observations as proxies for the parameter values that would be appropriate estimates for the WACC as at the beginning of each of the years; 1 July 2006 and 1 July 2007. My forecasts were based upon information available as of the close of business on 31 October 2005. The only WACC parameters that are different across the three years are the risk free rate and the debt risk premium.

3.   RISK FREE RATE

12   A/Prof Hathaway is in general agreement with my estimation of the risk free rate. I state that my estimate is based upon the rate-on-the-day rather than after any form of averaging. He does not take issue with this and seems to take the same approach himself. He notes two points of contention.

13   First, he states (paragraph 26), "The long bond rate is about 5.3% and the short rate is about 5.6%." He does not state how he obtains this rate or as of what date. For the financial year 2005/06 the rate should be as at the open of business on 1 July 2005. I use the rate-on-the-day of 5.11% for ULLS-Network (10-year maturity) and

5.10% for ULLS/SSS services (5-year maturity). My estimates are based upon data in the website of the Reserve Bank of Australia, which is the recognised authoritative source for such data. I am unable to determine the date of A/Prof Hathaway's estimate but it appears to be about early March 2006 when his report was prepared. It would not be appropriate to compound a WACC estimate around March 2006 with asset valuations calibrated to 1 July each year of the undertaking. Furthermore, there is no accepted form of averaging around 1 July 2005 that would produce a long rate of 5.3%.

14   In my opinion, the rate for 2005/06 must be a forward looking rate from the beginning of the year. Therefore, I do not agree with A/Prof Hathaway's rate for that year.

15   For years 2006/07 and 2007/08, it is necessary to forecast the rate that will apply at the beginning of those years. A/Prof Hathaway does not discuss the process of forecasting, nor does he estimate a rate for the future years.

16   The second point raised by A/Prof Hathaway, in paragraph 27, is with respect to consistency.[1] In paragraph 25 he notes that the market risk premium is usually based upon the 10-year bond rate. I agree the 10-year rate is appropriate in general and with respect to long-lived assets. My position is clear in section 6.1.1 of my ULLS-Network report.[2] In that section I recommend a 10-year maturity to be consistent with the long lives of the relevant assets. However, in section 6.1.1 of my ULLS/SSS report,[3] I explain that the useful lives of the relevant assets are approximately 5 years. Hence, I adopt a maturity of 5 years for the risk free rate in the estimation of WACC for the ULLS/SSS services.

17   The issue that A/Prof Hathaway raises is actually consistency between the maturity of the risk free rate and the estimation of the market risk premium. I discuss that further below and show that my analysis is fully consistent.

18   On the issue of consistency, he appears to have read (and cited) my ULLS/SSS report rather than my ULLS-Network report. Further, in reading the ULLS/SSS report, he failed to take account of my consistency between the risk free rate and the market risk premium in both reports. I discuss this below.

19   A further issue on the estimates of the risk free rate is setting an appropriate range for the estimates. The estimates for the year 2005/06 are based on observable market outcomes so I do not suggest any range. However the estimates for the following two years are forecasts and are certainly subject to estimation error. In my reports, I explain the reasoning to support my estimates of one standard deviation ranges. A/Prof Hathaway does not discuss these ranges, so I presume he does not take issue with them.

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[1]   I note that A/Prof Hathaway agrees with the need for consistency in the maturity of the risk free rate used in the CAPM.

[2]   Robert G Bowman, Report on the Appropriate Weighted Average Cost of Capital for the ULLS Network, December 2005.

[3]   Robert G Bowman, Report on the Appropriate Weighted Average Cost of Capital for ULLS and SSS, December 2005.

4.   MARKET RISK PREMIUM

20   Before addressing the issues that A/Prof Hathaway raises with respect to his estimate of the market risk premium ("**MRP**"), I refer to the consistency issue discussed in the section above. In his section on the risk free rate, A/Prof Hathaway accuses me of inconsistency. As set out above I use different maturities between the two reports because of the different useful lives of the relevant assets. The consistency issue that I raise in the paragraphs cited by A/Prof Hathaway (his paragraphs 25-27) relates to the maturities assumed within the CAPM.

21   In his paragraph 28, he notes that I use different MRPs in the two reports. As I clearly explain in my ULLS/SSS report (section 6.2.4, Adjusting to a 5-year maturity), I adjust the MRP for ULLS/SSS to 7.3% to achieve consistency with the maturity of the risk free rate. This consistency principle has been established in the GasNet decision of the ACT.[4]

22   My approach to estimating MRP for Australia is set out in detail in Appendix B to the reports for ULLS-Network and ULLS/SSS. The approach begins with the observation that securities markets in Australia changed so dramatically in the mid-1980s that data prior to then is not relevant to a forward looking estimate of MRP. I then outline an alternative approach. I first estimate the MRP for the US as a widely applied benchmark market in financial analysis. I then estimate an adjustment to this benchmark to reflect relevant Australian specific factors.

23   My estimate of the forward looking MRP in the US is 5.5% relative to a 10-year maturity risk free investment. A/Prof Hathaway agrees with this estimate (paragraph 56).

24   To convert the US MRP estimate to an estimate applicable for Australia requires consideration of critical differences between the two markets that are relevant to their respective systematic riskiness. I consider differences in taxation, in the composition of equity markets and indices, and country risk. My adjustments for differences in taxation and country risk are zero. A/Prof Hathaway does not comment on these adjustments.

25   An incomplete list of factors that would support a higher MRP for Australia include being a smaller market, with less liquidity, smaller companies, less diversity and fewer risk management opportunities. I particularly consider differences in the size and composition of the two markets. My adjustment for differences in equity markets and indices is in the range 1.1% to 2.75%. The mid-point of this range is 1.9%.

26   As my estimate of the US MRP is 5.5% and my final estimate of an appropriate forward looking MRP for Australia at similar maturity is 7%, I am effectively assuming that the adjustment is only 1.5% (comparable to a beta of only 1.27) and consequently am being conservative in my MRP estimate.

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[4]   Australian Competition Tribunal, Application by GasNet Australia (Operations) Pty Ltd [2003] ACompT 6,

27   A/Prof Hathaway disputes this adjustment to the benchmark rate. In his opinion the Australian market is less risky than the US market. He supports this opinion with discussions on the composition and size of the market.

28   My approach yields an estimate of 7% for use in the CAPM with a 10-year time horizon. This is used in estimating WACC for ULLS-Network. Adjustment for a time horizon of 5-years gives an MRP of 7.3%, which is used in the WACC estimation for ULLS/SSS. This adjustment is explained in section 6.2.4 of my ULLS/SSS report.

29   A/Prof Hathaway is of the opinion that the appropriate MRP for Australia is 5% ("revisited" Tables 1a and 1b). In addition to his criticisms of my adjustment for differences in the markets and indices, he presents evidence to support his MRP estimate.

30   Finally, he offers comments on my estimate of a one standard deviation range on the MRP.

4.1.   Composition of the Australian Market

31   In my report I state (paragraph 23, Appendix B of my ULLS-Market report), "The Australian market has a larger representation of resource-based companies, which have high levels of systematic risk."

32   A/Prof Hathaway does not dispute that resource companies are higher systematic risk, but argues that Australia is no longer a resource based economy (paragraph 31 and Figure 3). He cites statistics for the top 25 stocks on the ASX that resource companies comprise only 20%. Financial institutions comprise 51%.

33   I am not able to verify A/Prof Hathaway's statistics.

34   Information on Australian companies is available on the AGSM Risk Measurement Service. Using the December 2005 report, which coincides with A/Prof Hathaway's end point, I selected the top 25 companies by market capitalisation. There is a problem with respect to these companies as the largest company is Altria Group. It is over five times as large as the second largest company (BHP Billiton). This company is an industrial company headquartered in the US and listed on the New York Stock Exchange (NYSE), but cross-listed on the ASX.[5] Altria Group is not included in any of the ASX indices. Its inclusion would clearly skew any analysis and would not give an appropriate perspective on the Australian market.

35   Using this data the composition of the top 25 ASX companies (based on market capitalisation) is:

       Resource   30%

       Industrials   22%

       Financial   48%

36   As my analysis is based upon differences with the US as the benchmark country, a comparison needs to be made with the US. Of the top 25 US companies, 14% are

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5   Altria Group is also listed on at least six other stock exchanges.

in resource industries.[6] Clearly my contention that the Australian market has a larger representation of resource-based companies is correct, and the difference is substantial.

4.2. Size of the Australian Market

37   A/Prof Hathaway contends (paragraph 37), "Whilst Australia is small relative to the US, this does not automatically justify a size premium." He goes on to contend that my logic is based on liquidity issues and that the ASX is not illiquidity just because it is small.

38   I did not base my position specifically on liquidity, although I expect that it would be a contributor. What I observe is substantial evidence consistent with the intuitive proposition that the systematic risk of markets is negatively correlated with size.[7] That is, larger markets have less systematic risk.

39   It is well documented that risk, both total risk and systematic risk, is negatively related to size. Based on Ibbotson data, over the period 1926 through 1996, a portfolio of small stocks, defined as the smallest twenty percent of all firms listed on the NYSE, showed a return that was 6.52% higher than the return on the S&P500.

40   Note that although the portfolio is labeled small stocks, they are not small stocks as would be thought of with respect to the Australian stockmarket. As a measure of total risk, the standard deviation of the small stocks was nearly double the standard deviation of the S&P500. An estimate of the systematic risk (beta) of the small stocks portfolio can be made by dividing the excess return (over the risk-free rate of return) of the small stocks by the excess returns of the market portfolio (i.e., the S&P500). This calculation gives a portfolio beta for small stocks of 1.75. In contrast, my adjustment is equivalent to assuming a portfolio beta for Australia of about 1.27.

41   A recent book[8] states, "The size factor is also present in non-U.S. markets. Thus a small-cap premium has to be added to (the CAPM) when appropriate." For estimates of the magnitude of the size premium the author refers to his Exhibit 3.7. The data in that exhibit are very supportive of my estimate of the premium for Australia.

42   A/Prof Hathaway observes that Australia is the eighth biggest market by capitalisation. It is also the case that it is only about 2% of the world economy and about 4% the size of the US market, which is my benchmark for MRP.

43   From the AGSM Risk Measurement Service December 2005 report, the total market capitalisation of all listed companies in Australia (excluding Altria Group) is A$1,269.4 billion. From the Business Week 2005 Global 1200, the 25 largest listed companies in the US have a market capitalisation of US$4,050.4 billion. Considering the difference in exchange rates, the total Australian market is less

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6   See the Business Week 2005 Global 1200.

7   There is also a substantial literature to support that smaller firms have higher systematic risk.

8   E. Arzac, *Valuation for Mergers, Buyouts, and Restructuring*, 2005, John Wiley & Sons, Hoboken, p 207.

than one quarter as large as the 25 top companies in the US. In fact, the largest seven US companies have a higher value than all 1,708 companies listed in Australia.

44   The evidence is fully consistent with my contention that Australia is small relative to the US. Further, there is clear evidence to support the intuitive position that systematic risk is negatively related to size.

4.3.   Performance of the Australian Market

45   In his paragraphs 33-36, A/Prof Hathaway presents some data on recent historic returns of the ASX. The data in Figure 1 is consistent with a lower average MRP but higher volatility over the past two or three decades. A/Prof Hathaway concludes that the data is consistent with a MRP of 5%.

46   My use of a benchmark approach to estimating the Australian MRP is based upon the lack of relevance of historical market returns until quite recently.

47   The MRP for Australia today and going forward is set in an international market. However, the Australian debt and equity markets, until fairly recently, were subject to controls and intervention with little direct influence from international markets. The markets were domestic; foreign investment was not able to flow freely into and out of Australia. This is a very fundamental difference and the basis for challenging the relevance of the historical evidence.

48   Whilst it is possible to identify a recent period where markets were open to international investment, the period would be too short to provide a reliable *ex ante* estimate of MRP. Given that the markets only began opening in mid-1980s, the October 1987 "crash" and the transition to an open economy, I believe the relevant period would need to be limited to less than the most recent 20 years. Cornell, Hirshleifer and James[9] state that, "The unfortunate fact is that stock prices are so variable that the risk premium cannot be estimated precisely even with 20 years of data."

4.4.   ASX v MSCI World Indices

49   In his paragraphs 38-40, A/Prof Hathaway reports the results of a regression of the ASX index against the MSCI World index. He uses data from 1980 through 2005. He summarises (paragraph 40) that "the results indicate Australian stocks are collectively less risky (systematically) when viewed from the perspective of world investors." He infers that an equity investment in Australia is substantially safer than an equity investment in the World market.

50   The relevant analysis with respect to my estimate of MRP would be between the ASX and the S&P 500. However, to be consistent with A/Prof Hathaway's report, I obtained monthly data for the ASX and the MSCI World indices for the period June 1992 through March 2006[10] and ran the same regression of the ASX against the

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9   B. Cornell, J. Hirshleifer and E. James, "Estimating the Cost of Equity Capital," *Contemporary Finance Digest*, 1997, pp 5-26.

10   I was not able to obtain the identical data to Hathaway, but in my view, as stated previously, I do not regard data prior to about 1990 as being relevant to a forward looking MRP.

MSCI. The results are similar to that found by A/Prof Hathaway, with a beta of 0.62.

51   A low beta like this for the ASX on the MSCI can be inferred to mean that the appropriate return for Australia should be substantially less than for the World market. If this was the case then we should expect that the reverse regression would show a high beta (i.e., greater than one) for the MSCI, consistent with a higher expected return. However, that is not what is observed in the data.

52   When I reverse the data I find that the systematic risk of the MSCI is only 74% of the ASX. If we continue to interpret this regression result as above, it indicates that the return premium (above the risk free rate) to the MSCI is only 74% of that of the ASX. The problem of course is that these two results are not consistent.

53   There is something wrong with looking at the data in this way. If it is put in one perspective, Australia looks substantially lower risk and hence lower expected return. But if the perspective is reversed, Australia looks very high risk relative to the Global market. In my opinion, this simply illustrates that this sort of analysis has substantial limits.

54   A/Prof Hathaway also comments (paragraph 40) that Australian stocks are good risk diversifiers for foreign investors. This statement is only true at a trivial level and in any event has no direct relevance to the riskiness of the ASX relative to the MSCI or to the US (or for Australian investors around which the WACC is calculated. Australia is only about 2% of world equity markets and the composition of its market does not offer radically different investment opportunities. Removing Australia from the world equity markets would hardly cause a ripple to diversification abilities. I certainly see no basis for expecting international investors to accept lower returns from Australian investments.

4.5.   Evidence for Cross-listed Share

55   I was able to identify seven Australian companies that are listed on both the ASX and a US market and that have beta estimates available on Yahoo-Finance. The betas for these companies with respect to the ASX are available from the AGSM Risk Measurement Service December 2005 report. I extracted the beta estimates from Yahoo-Finance on 24 May 2006. The results are shown below.

	Equity Beta		
	ASX	US	Difference
ANZ Bank	0.79	0.62	-0.17
BHP Billiton	1.58	1.84	0.26
National Australia Bank	0.66	0.89	0.23
Rinker Group	1.73	1.64	-0.09
Rio Tinto	1.40	1.62	0.22
Telstra	0.26	1.09	0.83
Westpac	0.67	0.79	0.12
Average	1.01	1.21	0.20

56   This evidence is consistent with my adjustment to the US MRP. It indicates that an Australian company will have a higher beta when listed on a US market by about 20%.[11] So a company with a beta of 1.0 in Australia would be expected to have a beta of 1.2 in the US. This is fully consistent with the adjustment that I made in going from the US benchmark MRP to an MRP for Australia. In arriving at my MRP estimate of 7%, I assumed that the beta of the Australian sharemarket, if it were treated as a portfolio listed on the NYSE and evaluated relative to the S&P 500, would be 1.27.

57   An important point is that this is a difference that is not directly related to differences in size per se.

4.6.   Financial Analysts and Institutional Investors

58   In his paragraphs 42-47, A/Prof Hathaway discusses different investor groups and reports estimates of MRP by some sharebrokers.

59   A/Prof Hathaway relates his opinions about how various information providers and investor groups impact on how security prices are formed in the Australian stockmarket. It is difficult to respond as I do not dispute that he is expressing his views, but I do note that he does not cite empirical evidence in support of his views.

60   As to the marginal investor in Australia, which is the relevant investor group, I offer three points.

61   Recent research in Australia[12] shows that dividend imputation credits are not valued by the marginal investors. This is consistent with the marginal investors being non-resident taxpayers.

62   Research in New Zealand[13] investigates a number of issues including the identity of the marginal investors for listed New Zealand companies since the introduction of dividend imputation in 1988. The extent of foreign ownership in New Zealand is comparable to that in Australia. The dividend imputation system in New Zealand has changed over 14 years from one that did not permit streaming of imputation benefits to foreign shareholders to the point where foreign investors currently receive that benefit. Throughout this period, the marginal investors appear to have been non-resident investors.

63   If the marginal investors in New Zealand are non-residents, I believe it is highly likely that the same is true in Australia.

64   I have studied the impact of a dividend imputation system on equity prices and the role of the marginal investor.[14] Following on that analysis, for a market where there is a dividend imputation system, I believe the existence of a substantial

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[11]   I note that if Telecom (NZ), the parent company of AAPT, is included, the average increases slightly to a difference of 0.21.

[12]   D. Cannavan, F. Finn and S. Gray, "The Value of Dividend Imputation Tax Credits in Australia," *Journal of Financial Economics*, 2004, pp 167-197.

[13]   C. Cliffe, "Ex-Dividend Day Pricing in the New Zealand Equity Market," PhD dissertation, University of Auckland, 2002.

[14]   See R. Bowman, C. Cliffe and F. Navissi, "Implications of Dividend Imputation for Equity Pricing in New Zealand," *New Zealand Economic Papers*, December 1992, pp 249-259.

portion of investors in a market being non-residents for tax purposes is strong evidence that the marginal investor is a non-resident. The non-resident investor faces a substantial disadvantage relative to the resident investor because of the dividend imputation system. There are two basic alternatives.

65   If the marginal investors are residents, the pre-tax market returns (upon which we base MRP) will be lower to reflect the tax benefit of dividends. Then the non-resident investors are disadvantaged and would have to accept lower post-tax returns. The alternative is that prices are set by non-resident investors at a rate that provides them their required post-tax returns. Then the returns to resident investors will be attractive as the franking credit is not priced in their equity investments.

66   It is hard to accept that sophisticated international investors would be attracted to invest heavily in the Australian sharemarket if their return is lower than a competitive rate to the extent of the tax advantage through dividend imputation. In my opinion, it is likely that the expected pre-tax returns will be appropriate for the non-resident investors, and they will be the marginal investors.

67   In his Table 3, A/Prof Hathaway presents eleven MRP estimates from brokers. The MRP estimates have been disclosed in valuation reports. Six of the estimates are from late January 2006, and the other five range back to October 2001. The rates used range from 4.5% to 6.0% and there are differences in the assumed MRPs even within a given firm when the estimates are within a single day of each other.

68   I do not have access to broker "Dailies" and accept that these eleven estimates are as presented by A/Prof Hathaway. However, comprehensive data on such estimates would provide much more credibility.

69   There is considerable evidence on the reliability of valuation estimates by financial analysts. Analysts tend to over-estimate the value of companies and hence are biased to "buy" recommendations.[15] Analysts in Australia have also been shown to have biases and to have their valuations excessively impacted by broad market conditions.[16] This tendency to over valuation is particularly acute when the valuation is with respect to a company for which the analyst firm provides investment advisory services.[17]

70   There is at least one reason why the estimates of analysts might be expected to under-estimate the value of companies. There is substantial literature on "real options"[18] that shows that most companies have value from real options as well as from their existing assets and investments. Conventional valuation techniques do not include a value for real options.

71   So what we observe is that analysts tend to over value companies even though there is also a tendency to omit an element of value. How might the substantial gap be

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[15]   For example, see N. Jegadeesh, J. Kim, S. Krische, and C. Lee, "Analyzing the Analysts: When Do Recommendations Add Value," *Journal of Finance,* 2004, pp 1083-1124.

[16]   For example, see S. Azzi and R. Bird, "Prophets during Boom and Gloom DownUnder," *Global Finance Journal*, 2005, pp 337-367.

[17]   For example, see R. Michaely and K. Womack, "Conflict of Interest and the Credibility of Underwriter Analyst Recommendations," *Review of Financial Studies*, 1999, pp 653-686.

[18]   Real options arise when companies are positioned to influence the size and risk of their cash flows by expanding or contracting as events develop.

explained? There are two factors that likely contribute to the gap – optimistic earnings forecasts and under estimated MRP.

72   In my opinion, the evidence in A/Prof Hathaway's Table 3 is consistent with empirical evidence as briefly set out above and a tendency to under estimate MRP.

4.7.   Estimation Range on MRP

73   In his paragraphs 48-56, A/Prof Hathaway discusses my estimate of a one standard deviation range on MRP (2.5%) and offers his own estimate.

74   A/Prof Hathaway then attempts to apply this to the expectations of people. For example, he says that it "must follow" from my estimations that 5% of people expect the MRP to be 11.1% or greater. He is incorrectly interpreting what a one standard deviation range means.

75   The range on a best (mean) estimate provides information on how often we expect the actual MRP to turn out to be greater or less than the best estimate. So the proper statement to be drawn would be that 5% of the time the actual MRP would be 11.1% or greater. It says nothing at all about how many people will have an expectation that the MRP would be greater than 11.1%. This can be illustrated easily.

76   I believe that the best estimate of MRP is 7% and that the standard deviation is 2.5%. This means that I expect that 5% of the time the future MRP will turn out to be 11.1% or greater.

77   Now assume that a group of other people share my beliefs. We all believe the best estimate is 7% and the standard deviation is 2.5%. Each of us expects that 5% of the time the future MRP will turn out to be 11.1% or greater. But none of us believe that the best estimate is 11.1%.

78   In paragraph 51 A/Prof Hathaway says that I am confused. That is not true. I understand his point, as it is very basic to statistics.

79   He correctly says in paragraph 52 that there is no established theory on how the expected MRP is formed in the market place. He then goes on in the next paragraph to propose basing the range on ex ante estimates that he has reported in his Table 3 rather than any historical evidence on MRP. From this data he ends up recommending a one standard deviation range for MRP of 1%.

80   Before discussing the range on MRP any further, we need to go back to the MRP estimate. Although we differ on the appropriate estimate, A/Prof Hathaway agrees with me that the estimate is for a period of 10 years.[19]

81   Therefore, a proper interpretation of my mean and standard deviation estimates of MRP is that there is a 5% (1 in 20) probability that the MRP over the coming

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[19]   I use a period of 5 years for ULLS/SSS and it is not clear if Hathaway agrees with that period.

decade will be 11.1% or greater. Similarly, on the downside, there is a 5% (1 in 20) chance that the MRP will turn out to be 2.9% or less.[20]

82   From A/Prof Hathaway's Figure 1 we can see that the 10 year averages for MRP over the past 20 years show that it has been greater than 15% once and greater than 11.1% 3 or 4 times. On the downside, it has been negative once, and there have been 5 times when it has been less than 2.9%.

83   If the most recent history of the MRP is repeated going forward for the next decade, a reasonable range would have to allow a 1 in 20 chance of the MRP being over 15% and a 1 in 20 chance of it going below zero.

84   I believe a reasonable interpretation of the MRP data supplied by A/Prof Hathaway is that my range is too low!

5.   DEBT PROPORTION

85   A/Prof Hathaway does not take issue with my use of **[C-I-C]** for ULLS-Network. He does not specifically discuss my use of **[C-I-C]** as the debt proportion for ULLS/SSS, but in his Table 1b he comments that my estimate is acceptable, and in "revisited" Table 1b (page 41) he uses my estimate of **[C-I-C]**.

86   I note that A/Prof Hathaway supports measuring the debt proportion in market values, not accounting values as proposed by ACCC.

6.   DEBT RISK PREMIUM

87   A/Prof Hathaway judges that my estimates of the debt risk premium for ULLS/SSS (0.81% for 2005/06 and 0.93% for the following two years) are reasonable. He takes issue, however, with my estimate of 1.06% for ULLS-Network (for 2005/06). He does not comment on my estimates for the two financial years 2006/07 and 2007/08 (1.15%).

88   He says (paragraph 63), "It is quite inconsistent to assert that the debt risk premium for (ULLS/SSS) is lower than for the network ...." What he does not acknowledge is that the debt risk premiums are for different maturities. He also makes no comment on the basis for my estimates of the rates.

89   My estimates are based upon market quotes on the day of the spread between the Telstra and government (risk free) bonds of the appropriate maturities. I also explain that for the lower debt proportions that apply, these spreads are likely to be reasonable estimates of the debt risk premium for ULLS-Network and ULLS/SSS.

90   Not only does A/Prof Hathaway not provide a basis for his estimates, when he identifies what he believes is an inconsistency between the debt risk premium I estimate for ULLS-Network and ULLS/SSS, he asserts that it is the lower rate that is reasonable and the higher rate is too high. He offers no basis to support his

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[20]   The time horizon would be 5 years for interpreting the range on MRP for ULLS/SSS. In general, the shorter the time horizon, the wider will be the range, so the range for the 5 year MRP estimate for ULLS/SSS is likely to be greater than my estimate of 2.5% for one standard deviation.

assertion over the alternative that the high rate is reasonable and the lower rate is too low.

91   He notes that I have estimated a one standard deviation range for the debt risk premium estimate of 0.15%, but makes no judgement on it in this section. However, in his Table 1a he states that he regards the estimate as "too high". He does not comment on my analysis in estimating an appropriate range and provides no basis for this judgement. Subsequently in his "revisited" Tables 1a and 1b (pages 40 and 41), he provides his range estimates, which are the same as my estimates.

7.   DEBT ISSUANCE COSTS

92   The first point that A/Prof Hathaway makes on debt issuance costs is that they tend to be episodic and hence should be included in the cash flows. I agree that this is an alternative that would yield similar results in the long-run. However, it would result in volatility in the cash flows between years when debt was issued and years when debt was not issued unless it was amortised. In regulatory circumstances, volatile costs, which flow through to prices, are not preferred when a reliable smoothing alternative is available.

93   In the GasNet Access case, the ACCC included debt issuance costs as a specific component of the cost of debt (and hence in the WACC), and this perspective was accepted by the Australian Competition Tribunal. I regard the inclusion of debt issuance costs in WACC as appropriate.

94   A/Prof Hathaway then presents an argument that is perplexing and quite at odds with accepted practice in setting regulatory WACC (paragraph 67). He reasons that ULLS/SSS would not have to make a debt issue. Telstra is so large that "Telstra could easily fund (the debt of ULLS/SSS) out of their cash flow." This notion should be dismissed out of hand. There is no basis in regulation in Australia for basing estimates of WACC parameters on an assumption that a business operates within the larger Telstra. The perspective of a new entrant to the ULLS/SSS business is appropriate and refutes A/Prof Hathaway's contention. In the TSLRIC context in which these WACC estimates are to be applied, the assumption made is that a stand-alone business separate from Telstra and providing only the declared service is being costed. In this perspective what Telstra would actually do (including the option of funding out of cashflow) is entirely irrelevant.

95   In discussing the debt issuance costs for ULLS-Network, which is substantially larger than ULLS/SSS, A/Prof Hathaway makes the point that historical debt issuance costs are now sunk costs. Since WACC is to be forward looking, he judges that only the cost of new debt should be recognised. This position is consistent with his point above that the costs should be included in cash flows. Again, his suggestion to ignore historical debt issuance costs is contrary to established practice and is inconsistent with the TSLRIC context in which the WACC estimates are to be applied..

96   In his section on debt issuance cost, A/Prof Hathaway makes no mention of appropriate ranges for the debt issuance costs. In his Table 1a he comments that my range for ULLS-Network is "too high". With no basis or support, in his

"revisited" Tables 1a and 1b he asserts a range estimate of 0.05% for both ULLS-Network and ULLS/SSS. In my opinion, this is substantially too low for either of the businesses.

8.   TAX RATE

97   A/Prof Hathaway agrees with my report and with Telstra that the appropriate tax rate is the current statutory rate of 30%.

98   I note that this is contrary to the position of ACCC.

9.   FRANKING CREDITS

99   A/Prof Hathaway devotes ten pages to the estimation of the value of franking credits ("**gamma**"). In fact this section has little to do with my estimate of 50% for gamma, but rather is an extended defence of a new position that the appropriate value of gamma is 35%.

100   As I explain in my reports, my position is that the ACCC's position of gamma equal to 50% should only be changed when there is a solid weight of evidence to support a change. I continue and express my view that evidence is accumulating to support a reduction of gamma to a value approaching zero. I explain that in my opinion the weight of evidence is not yet conclusive either way and does not yet unequivocally support a change; hence I continue to support an estimate of 50%.

101   In the remainder of this section I will briefly comment on the major points of A/Prof Hathaway's analysis. I do not dwell on his analysis as it is unlikely to impact on any determination by ACCC, particularly as Telstra accepts ACCC's position.

102   Although I believe A/Prof Hathaway's estimate of 35% would be a change in the right direction, I do not believe A/Prof Hathaway's evidence is relevant to the debate at this time.

103   A fundamental perspective for considering the value of gamma is the value of franking credits to the marginal investors. It is marginal investors that set security prices and hence the value of the franking credits.

104   In his section "Cost of capital and franking credits" (paragraph 79-88), A/Prof Hathaway rightly notes that the Australian tax system is designed to prevent non-resident taxpayers from benefiting from the dividend imputation system. He then argues (paragraph 85), "Just because foreign investors cannot utilise franking credits whilst the stock is in their hands does not mean they will value franking credits as worthless for all the future dividends. This is because when they sell their stock into the market they will be selling into a market that does value franking credits."

105   In this statement and through this section of his report, he simply assumes that the marginal investors are resident Australian taxpayers (i.e., they value franking credits). The key to valuing the franking credits is to understand the tax

circumstances of the marginal investors. To merely assume this, provides no useful information.

106   A/Prof Hathaway goes further (paragraph 87). "Foreign investors trade in a market that consists of domestic and foreign investors. … However, domestic taxpaying investors do value the credits and they are participating in the market so the market places some value on franking credits."

107   This is not a correct understanding of how financial markets work. The fact that a person or group of people participate in a market does not mean that the market places some value on their valuation or circumstances.[21] Again, it is the marginal investors that determine the value of companies and of franking credits.

108   In section M.1, A/Prof Hathaway reports results of a survey of how some broking firms value franking credits. The responses provide little help as they range from full value (100%) to no value.

109   In section M.2, A/Prof Hathaway describes a creative way used by companies to stream dividends to the shareholders that are able to use the franking credits. This is a sensible practice no matter what value the market ascribed to franking credits. It does not help us determine an appropriate value for the franking credits.

110   Finally, in section M.3 he reports values of franking credits based upon the distribution of franking credits (he reports 70% distribution to shareholders) and data on the portion of franking credits that are redeemed by taxpaying shareholders (30%). The combination of these two gives his estimate of 35% as the value of franking credits.

111   A difficulty with his analysis here is that it is based upon averages across investors in different tax-paying situations (either fully able to utilise or fully unable to utilise the imputation credits), not marginal investors. Although interesting for many purposes, including tax policy, it is not relevant to the task of valuing the franking credits.

112   In the section 4.6 above on MRP, I cited recent research in New Zealand that uses the tax implications of dividend imputation to investigate a number of issues including the identity of the marginal investors for listed New Zealand companies since the introduction of dividend imputation in 1988. The extent of foreign ownership in New Zealand is comparable to that in Australia. The dividend imputation system has changed over 14 years from one that did not permit streaming of imputation benefits to foreign shareholders to the point where foreign investors currently receive that benefit. Throughout this period, the marginal investors appear to have been non-resident investors.

113   Although it is standard practice in Australian regulatory decisions to assume gamma equals 50%, that is not a likely value. The value of a received franking credit will be either (approximately) 100% for a resident taxpayer or nil for a non-resident taxpayer. It is either of full value (gamma equals 100%) or not of value (gamma equals 0%). There is no significant middle ground.

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21   This is discussed in R. Bowman, C. Cliffe and F. Navissi, op. cit.

114   In the securities market, there will be a mix of shareholders as to tax status but a group of investors will, by force of their acumen and trading, be the marginal investors. In my opinion, this group will be international investors and thus gamma will be near zero. However, I appreciate the position of regulators on this issue. At this point they are adopting a gamma that is not sensible – they are sitting on the fence so to speak. However, they need to be very confident of their decision before they jump off the fence toward either 100% or nil. As the weight of evidence is still building, I consider it prudent for regulators to continue to sit on the fence at gamma equals 50%.

10.   ASSET BETA

115   A/Prof Hathaway uses this section for a discussion of debt beta. He proposes an estimate of debt beta based upon a CAPM structure (paragraph 130). This is not an unusual approach, but actually provides an upper bound on a range for debt beta (as it ascribes the entire debt premium to being a reward for systematic risk in the debt). The lower bound is zero, and the best estimate almost certainly lies between these two bounds.

116   I assumed a debt beta of zero, largely as it is the assumption used by the ACCC, and it will have very little affect on WACC as the debt proportions are so low.

11.   EQUITY BETA

117   In my report on ULLS-Network equity beta,[22] I use information from the three basic approaches to estimating systematic risk - direct estimation, first principles and comparable companies. The direct estimation method is not possible on the ULLS-Network business as it is not a separately listed company. I use information on the beta of Telstra as part of my consideration.

118   A/Prof Hathaway begins his section on equity beta (paragraph 135) with a complete distortion of my report. He asserts that I "claimed trading in Telstra was 'thin'."

119   In paragraph 25 of my report on equity beta I say,

> *"The Scholes-Williams approach to estimating beta is intended to control the effect of thin trading where the measurements of the return to the shares and the return to the market index are not contemporaneous. The estimation approach is normally useful for shares that are infrequently traded. This is clearly not the case with Telstra as its shares are among the most actively traded on the Australian Stock Exchange ("**ASX**"). However, the estimation approach also captures leads and lags between the share price and the market index."*

120   In paragraphs 26-27 of the same report I note that a test statistic reported by the AGSM Risk Measurement Service indicates that the Scholes-Williams estimates are likely to be more reliable than the OLS estimates for the estimation of Telstra's equity beta.

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22   Appendix F of my ULLS-Network report.

121   I do not rely upon the Scholes-Williams estimate of beta and do not even report it. I do note that there are significant issues with the estimation of equity beta for Telstra.

122   A/Prof Hathaway employs a bootstrapping approach to estimating beta. Although I have not seen this approach used in beta estimation for regulation in Australia, it is a credible statistical technique provided the assumptions of the method are met.

123   A/Prof Hathaway estimates beta using the bootstrapping technique over the 96 month period from 1998 through 2005. Unfortunately, an assumption of bootstrapping is that the distribution of returns is stable across the period. His Figure 4 and discussion in paragraph 136 identifies three distinctly different periods.

124   In my report on equity beta I take note of this fact. "A factor that can make the use of historic estimates of beta of questionable validity is if there is a fundamental shift in the systematic risk of a company." (paragraph 15) I also note the possible impact on beta of the two Telstra share issues and choose to use a five year period for my beta estimates. I acknowledge that there is a possibility of instability in the distribution of returns over this period, but I believe it would be substantially less than if the period before November 2000 was included.

125   Unfortunately, A/Prof Hathaway said he was unable to reasonably examine my evidence with respect to first principles or comparable companies because of information being marked commercial-in-confidence. He says of the comparable company analysis (paragraph 144), "This is a pity because it is an important part of the Report." I agree.

126   A/Prof Hathaway presents some data on the Australian Infrastructure index to inform his estimate of beta for ULLS-Network. This is a form of comparable company analysis. To judge whether the companies in the index constitute reasonably comparability would require the identity of the companies included. I do not have that information and was unable to locate it on the internet.

127   If I had the list of companies included in the index used by A/Prof Hathaway, I would want to consider the businesses, the asset types, form of regulation (if any), debt proportions, etc.

128   I am unable to evaluate the analysis done by A/Prof Hathaway using the Australian Infrastructure index.

129   In his paragraph 151, A/Prof Hathaway considers my analysis on the appropriate beta for ULLS/SSS. His only comment is to question why I choose to delete certain companies from consideration. He states that there is no justification for arbitrarily dropping some and retaining others.

130   I explain the selection/deletion procedure in my report, and the table at section 9.1 discloses data on all seven companies. A reader can apply an alternative procedure, but the essential message of the data will still be the same. The ULLS/SSS businesses warrant a high asset beta.

131   A/Prof Hathaway presents no other information on the asset or equity beta for ULLS/SSS. In Table 1b, he comments that my asset beta estimate is "Acceptable?" but that my equity beta estimate is "High". This is inexplicable as the conversion from asset beta to equity beta is mechanical and small. In his "revisited" Table 1b, he makes the same estimates as I have made for both the asset and equity betas.

132   With respect to the one standard deviation ranges for the betas, A/Prof Hathaway's position is in the "revisited" Tables 1a and 1b. He accepts my ranges for the ULLS/SSS estimates but not the ULLS-Network estimates. In his paragraph 149 he discloses that he uses the standard error from his analysis of the Australian Infrastructure index. As I mentioned above, I am unable to evaluate that data from what has been provided in his report.

133   A/Prof Hathaway has no discussion of my report where I develop my one standard deviation ranges. In my opinion, my estimates and the procedure that I followed are more substantive and reliable than the one data point used by A/Prof Hathaway.

12.   EQUITY ISSUANCE COSTS

134   A/Prof Hathaway's comments on equity issuance costs parallels his discussion of debt issuance costs. He begins disclosing (paragraph 152), "I have never seen anyone prior to these Reports include the cost of equity issuance in the cost of capital." He does not state whether he has read ACCC's Final Decision on GasNet, where ACCC included an allowance for equity raising cost as an annual non-capital cash flow.

135   In his "revisited" Tables 1a and 1b, he estimates the equity issuance costs at 0% and similarly the range at 0%. Neither estimate is credible or consistent with current regulation in Australia.

136   His discussion makes four points. I have addressed all of these issues in section 7 above on debt issuance costs.

137   The first point is that the costs "should be included, if at all, in the appropriate cash flow." (paragraph 153) ACCC has adopted this treatment, and has done so with an annualisation of the equity issuance costs. In paragraph 29, Appendix D of my ULLS-Network report, I discuss these alternatives and express my preference for treatment in WACC. As with debt issuance costs, there are the two alternatives, and the effect on pricing decisions should be the same.

138   His second point (paragraph 154) is that Telstra, because it is so large relative to ULLS/SSS, would not actually have to make any equity issues, so there would be no costs. There is no basis in regulation in Australia for conditioning estimates of WACC parameters on an assumption that a business operates within the larger Telstra. This perspective is inconsistent with the TSLRIC context in which the WACC estimates are to be applied. The assumption under TSLRIC is of a stand-alone entity providing only the declared service. Further, ACCC does not accept his suggested approach.

139   His third point (paragraph 155) is with respect to ULLS-Network. Here he accepts that ULLS-Network would have to incur costs but that the business should be

treated as perpetual. ACCC used this assumption in its GasNet decision. I discuss this in my ULLS-Network report and explain why I believe the **[C-I-C]** year life is more appropriate. The difference between assuming a **[C-I-C]** year life and a perpetual life is only 0.02%.

140   His fourth point (paragraph 157) is that if any costs are to be included in WACC or cash flow it should only be future costs. This suggestion is contrary to established practice and inconsistent with TSLRIC including the method used by ACCC.

141   A/Prof Hathaway makes only one comment on my assumed one standard deviation range for equity issuance costs in paragraph 156. "Even allowing for using the life of the asset (**[C-I-C]** years) as the life of the equity this upper estimate of 0.4% equates to fantastic 15% upfront cost of equity issuance (calculated as 1.004^{37})."[23]

142   A/Prof Hathaway's calculation is wrong.

143   What he has calculated is the <u>future</u> value of a rate of 0.4%. However, the equity issuance costs are paid and then amortised over some future period that benefits from the issuance. That is, the calculation he is trying to make should be the <u>present</u> value that would be amortised over the time period if the rate 0.4% is used. The correct calculation shows that the equity issuance costs would be about 3.5% of the total value of the equity issue.[24] Given that this is my estimate of the upper bound of a reasonable range, the evidence given in Appendix D of my ULLS-Network report clear supports that this is a very conservative amount.

144   A/Prof Hathaway makes no other comment on my range estimate for either ULLS-Network or ULLS/SSS. He also provides no substantive data on the equity issuance costs that he supports for either business.

13.   SUMMARY

145   In my opinion, A/Prof Hathaway does not offer any substantive evidence to challenge my estimates of WACC parameters or appropriate ranges for those parameters for either ULLS-Network or ULLS/SSS for the relevant years.

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[23]   Hathaway's report has the calculation as 1.004 to the power 37, but I assume this is a typographical error and is meant to be 35, as that is the period I assumed for amortising the equity issuance costs.

[24]   This is based upon 35 years and an assumed cost of equity of 11%. The calculation is not sensitive to any reasonable cost of equity.