Telstra's WACCs for PSTN-OTA AND LCS Businesses

A Reply to Jason Ockerby's "Response to a Report on the appropriate weighted average cost of capital for the PSTN network by Professor Bowman dated March 2006"

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 issues with regard to the market risk premium raised by Jason Ockerby in his "Response to a Report on the appropriate weighted average cost of capital for the PSTN network by Professor Bowman dated March 2006." My report has to do with the appropriate Weighted Average Cost of Capital ("**WACC**") for its PSTN Originating and Terminating Access services ("**PSTN-OTA**") and Local Carriage Service ("**LCS**") for the financial years 2006/07 and 2007/08 ("**My Report**").[1]

2   I am instructed that Telstra considers the information in this statement confidential. I have prepared this statement on the assumption that the information will remain confidential and that the information 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 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.   MARKET RISK PREMIUM

4   My approach to estimating market risk premium ("**MRP**") for Australia is set out in detail in My Report (section 6.2) and in Appendix B to that report.

5   Ockerby begins his report by asserting that I apply two approaches to estimating the MRP: historical averaging and a benchmark approach. This is not true. I discuss the use of evidence on historical market returns in Australia, but I clearly reject the use of that data for estimating a forwarding-looking MRP.

6   For example, in paragraph 61 of My Report I say, *"In my view (the historical MRP) is not a valid basis for estimating the forward-looking MRP."*

7   *"(T)he economic conditions in Australia prior to reforms in the 1980s were of a segmented market that was not open to international investment and funds flows. I do not regard the historical returns in Australia as being indicative of the returns that would have been realised if the markets had been open and unfettered."*

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[1]   "Report on the Appropriate Weighted Average Cost of Capital for PSTN-OTA and LCS," dated March 2006.

(paragraph 59) Since the Australian market is now open and unfettered, returns prior to the mid-1980s provide limited if any guidance as to the forward-looking MRP.

8   The method I use to estimate the forward-looking MRP for Australia is the benchmark approach.

> *In the absence of a significant time series of relevant historical information, in my opinion estimating MRP using a benchmarking approach is appropriate. With this approach, a benchmark country is chosen based upon it having the most reliable estimate of MRP available. Then the potential differences between the MRP in that country and the MRP in Australia are considered. The benchmark MRP is adjusted for the estimated difference between the two countries to arrive at an estimate of the MRP for Australia.* (paragraph 64)

9   Because Ockerby raises some interesting and important points in his section on the historical approach (paragraphs 6-15), I will discuss this in the section below.

2.1   Historical approach

10   Ockerby provides three reasons why historical averaging is not appropriate for estimating MRP.

11   *"Firstly, despite the long time periods used, there remains substantial variation and hence uncertainty as to the historic average MRP."* (his paragraph 9)

12   I agree and have said so in other discussions of an appropriate range for MRP.[2]

13   He goes on to cite data that *"a range of 3.8% to 11.4% is needed to have a 95% chance of capturing the true average historic MRP."* This is consistent with my estimates of a substantial range on estimates of MRP.

14   *"Second, long term historic data may not be a guide to future expected MRP. To the extent that historic data frames investors' expectations, recent highs in world equity markets might elicit reasonable expectations form investors that future MRP may be somewhat less than recent returns or perhaps negative. Alternatively, the change in the MRP may be temporary."* (his paragraph 10)

15   Ockerby's point here is not clear but seems to relate to predictions of short term MRP. That is, he suggests that MRP may be cyclical - periods of high returns *"may elicit reasonable expectations from investors",* and that periods of low returns will follow. The foundation of this idea seems to be in the presumed behaviour of investors. However, even if we assume that the equity markets move with investor psychology, an assumption that has not been supported in the literature, there is more support in the human behaviour and psychology literatures for the view that investors will expect recent past to continue, not reverse.[3]

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[2]   For example, see my "Confidential Report on WACC in Response to ACCC Draft Decision on ULLS and SSS," dated September 2005, section 3.3 and particularly section 3.3.4.

[3]   The human behaviour and psychology literatures refer to this as "framing". The past returns frame our future returns expectations. Other psychological patterns that could be considered include attribution theory and hindsight bias.

16   *"Third, the use of an historic approach fails to take into account permanent changes in domestic and international markets."* (his paragraph 12)

17   I agree and have said this in a number of places including paragraphs 58 and Appendix B, paragraph 10 of My Report. My estimate of the benchmark MRP for the US includes recognition of this. Ockerby even includes that I have identified four changes that contribute to a decline in a forward-looking MRP relative to historical rates (his paragraph 12).

18   In paragraph 12, Ockerby notes that I have rejected *"the view of the ACCC that the MRP has fallen due to changes in Australian markets. In contrast, in Appendix B, the benchmark approach adopted by Professor Bowman appears to accept the argument ..."*

19   To understand that there is no contradiction, it is necessary to read my report and understand the fundamental point that I make with respect to historical data in Australia and ACCC's comments that are relative to that data.

>   *(T)he ACCC is asserting that the historical estimates of MRP in Australia are higher than a current forward-looking MRP for Australia. That contention is not obvious as the economic conditions in Australia prior to reforms in the 1980s were of a segmented market that was not open to international investment and funds flows. I do not regard the historical returns in Australia as being indicative of the returns that would have been realised if the markets had been open and unfettered. To sustain its view the ACCC must present credible evidence with respect to the market that existed as the historical returns were generated. It does not do that.* (paragraph 59)

20   Immediately before the paragraph above, I stated, *"I agree that there have been changes in international securities markets and economies that will tend to decrease a **market determined** forward-looking MRP relative to prior periods."* (emphasis added)

21   However, MRP data for Australia prior to the mid-1980s were not determined in an open international market. I believe that security returns where investors have very limited options would be lower than if there were an open and efficient international market. Today and going forward, security returns are determined in an open and international market. ACCC has not acknowledged the importance of this in its comments on MRP and my reports.

22   However, as MRP data for Australia prior to the mid-1980s, returns in Australia were not determined in an open international market. I believe that equity returns where investors have very limited options would be lower than if there were an open and efficient international market. Today and going forward, security returns are determined in an open and international market. ACCC has not acknowledged the importance of this in its comments on MRP and my reports.

23   Ockerby concludes (paragraph 15) that *"... unmodified historical data from Australia cannot readily be relied upon for a point estimate of the MRP for a local PSTN operator."*

24   I clearly agree with this point, as I have rejected the historical Australian data.

2.2   Benchmark approach

25   Ockerby notes that I consider a range of sources but do not discuss forward-looking estimates based on analysts' earnings forecasts. That is correct.

26   There is a developing body of empirical literature using analysts' earnings forecasts as the basis for estimating a forward-looking MRP. The appeal of this method is that it does not rely upon historical returns. The weaknesses of the method are numerous.

27   The approach is based upon analysts' forecasts. There is a substantial body of literature that shows the predictive ability of analysts is very limited.

28   The approach is based upon forecasts of earnings. The inadequacies of accounting measures of earnings as substitutes for economic and market based measures are well known and cited in virtually any textbook on financial management.

29   The approach is based upon forecasts that have very short time horizons. The MRP that is to be estimated for the purpose here must have a horizon of ten years.

30   The empirical research is relatively recent and still developing. The sophistication and robustness of the literature is steadily increasing, but it is clear that the value of the estimates has yet to be determined.

31   In my opinion as an academic and an empirical researcher, this strand of research is interesting and contributing to our knowledge. However, it is not yet sufficiently developed to provide guidance in the very "real world" task of estimating a MRP for use in estimating WACC for the PSTN-OTA and LCS businesses.

32   The rest of Ockerby's section on my benchmark approach addresses the need for an adjustment to the benchmark MRP to make it appropriate for Australia.

33   A terminology issue needs to be clarified. Ockerby states (paragraph 19) that country risk differences *"do not appear necessary."* I discuss country risk, as the term is commonly used in the literature, and also conclude that issues of country risk will (largely) be reflected in the risk free rate and will generally not be reflected in the MRP. I propose no adjustment for country risk.

34   However, Ockerby appears to use the term country risk to encompass all differences between the equity markets of countries.

35   He says (paragraph 19), *"As markets around the world have become more integrated, country specific risks tend to be dominated by global trends and the MRP in markets such as Australia are likely to have been substantially lowered."*

36   This statement is based upon his assertions on the effect of the international trend to integrated markets. To a large extent, the trends that he posits will apply to the US as well as Australia. Therefore, my use of the US MRP as the benchmark, builds such trends into my estimate.

37   Ockerby provides a quote from Dimson, Marsh and Staunton[4] in his paragraph 20 that proposes taking a global approach to determining MRPs, rather than a country by country approach. The quote acknowledges that there are differences in risk between markets, but that the cross sectional differences are more likely to be attributable to country specific historical events. The authors then suggest taking a global rather than a country-by-country approach to estimating a forward-looking MRP.

38   Unfortunately, Dimson, Marsh and Staunton do not expound on this statement and do not repeat the statement in any subsequent publications of which I am aware.

39   Ockerby interprets the statement by Dimson, Marsh and Staunton to mean that Australia would have the same MRP as other countries. I do not believe their statement was intended to be interpreted in this way. For example, in the very next paragraph Dimson, Marsh and Staunton state that *"... there must be some true differences across countries in their riskiness."*

40   If Dimson, Marsh and Staunton meant that there were no cross country differences in MRP then they would be saying that the appropriate forward-looking MRP would be the same for the US, Australia, Singapore, Bangladesh, Cambodia, China, Zimbabwe, South Africa, Libya, India, Iran, Turkey, Russia, etc. This is simply untenable.

41   The benchmarking approach that I use abstracts from a country-by-country approach using historical returns. I use a benchmark country[5] and then adjust for differences between Australia and the US.

42   The contention of Ockerby that there is no difference between the MRP of the US and Australia can best be addressed by going back to the approach that I use. This approach is based upon well known principles of portfolio theory. These are principles that are found in any textbook on investments and are central to the approach used by all regulators in Australia, including ACCC, to estimate the cost of equity capital.

43   The Capital Asset Pricing Model ("**CAPM**") is used to estimate the cost of equity capital. It is fundamental to the CAPM that certain risks (diversifiable risks) can be eliminated by building a well diversified portfolio. A level of risk will still remain and this risk (systematic risk, commonly referred to as beta) is related to the movements in the market. Diversification cannot eliminate systematic risk.

44   The beta of a portfolio is a simple weighted average function of the securities in a portfolio. The betas of portfolios will vary widely depending upon the securities included in the portfolio. For example, a portfolio of computer and technology

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4   The working paper cited by Ockerby has been published, virtually unchanged, as E. Dimson, P. Marsh and M. Staunton, 2003, "Global Evidence on the Equity Risk Premium," *Journal of Applied Corporate Finance* 15(4), 27-38.

5   I use the US as the benchmark country because of the wealth of data and analysis that is available for that country. I explain this choice in Appendix B, paragraph 5 of My Report. The alternative would be to use a global MRP. I do not use such a measure because of the lack of historical data on a global index that is representative of the global market going forward. For example, no lengthy historical measure of global returns is going to capture the future importance of Japan, China and India.

companies might have a beta of 2.0, while a portfolio of food related companies might have a beta of 0.6.

45   If we want to estimate the expected return to a portfolio, we would estimate the beta of the portfolio and then use it in the CAPM.

46   The share market of a country is comparable to a portfolio of the equity securities that make up that market. Thus, we commonly refer to the aggregate share market as the "market portfolio".

47   When viewed in the context of a larger market, such as the US share market, a country "portfolio" will have a beta relative to the US share market. As noted above, general principles that apply to the betas of individual stocks also apply to the betas of portfolios.

48   If we were estimating the MRP of a country that was overwhelmingly based upon agriculture, we would expect the beta of that country (i.e., its portfolio of stocks) relative to a broad based economy like the US to be similar to the beta of agriculture stocks in the US.[6] Or if we were estimating the MRP of a country that was overwhelmingly based upon oil, we would expect the beta of that country to be similar to the beta of oil stocks in the US.

49   With the estimate of the beta of the country against the US, we can estimate the MRP of the country as is done in the CAPM by multiplying the US MRP by the country beta. This is the approach that I use in estimating the MRP for Australia.

50   I also discuss my knowledge of the impact of size of companies on their betas in Appendix B of My Report. There is considerable empirical evidence of a strong negative correlation between the size of companies and their betas. Smaller companies have higher (systematic) risk than larger companies in the same business. I provide data on the magnitude of this effect and of the comparative sizes between Australian and US companies.

51   There is no doubt that publicly listed Australian companies are far smaller than publicly listed US companies, particularly those in the S&P 500, which is the market index that is most commonly used as the market for purposes of estimating the US MRP.

52   Australia's equity market is only about 4% the size of the US market, which is my benchmark for MRP.

53   From the AGSM Risk Measurement Service December 2005 report, the total market capitalisation of all listed companies in Australia[7] 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 than one quarter as large as the

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[6]   There are other issues involved in relating the equities of one country to the equity markets of another country. The foremost of these is currency risk. From the perspective of international investors, an exposure to the fluctuations in the Australian dollar introduces an additional layer of risk to an investment in Australian shares. I have not included this as a factor in my estimation of the adjustment from the US benchmark MRP to an estimate of the MRP for Australia.

[7]   This excludes Altria Group, a US listed company that cross listed on the ASX in 2005.

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.

54   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.

55   Almost all countries have some elements of diversification in their economies. Therefore, to estimate their MRPs, we need to consider the characteristics of the economy and then relate those to the benchmark economy and share market. That is precisely what I do.

56   In Appendix B of My Report I discuss the characteristics of the two economies and how that would be expected to impact upon the beta for Australia (as a country portfolio) if it were to be listed on the US share market. I then consider relative sizes of companies. From that analysis, I estimate the beta of the portfolio of Australian share market companies if they were listed on the US share market. That then provides my adjustment factor to go from the estimated MRP for the benchmark country to the MRP for Australia.

57   In summary, I believe the benchmark approach I use to estimate the MRP for Australia is theoretically and logically sound. Further, I believe the steps that I take to apply the benchmark approach and the conclusions I reach are well reasoned, supported by empirical evidence, consistent with extant research and provide an accurate estimate of MRP.

2.2   Reasonableness test

58   In My Report, section 6.2.3, I suggest that the volatility of the MRP has increased dramatically since the beginning of the de-regulation in the early 1980s. This increase in volatility is indicative of an increase in uncertainty, which is a measure of risk.

59   Ockerby criticises my reference to this volatility. He misses a fundamental point when he references forward-looking rates to historic rates as he does in paragraph 25. A basic premise of my analysis is that the historic data is not a reliable measure of the returns that would have pertained if Australia had been an open and international market for its history. Therefore, a comparison between the historical returns of the past 20 to 25 years and the earlier historical returns is invalid.

60   He then rejects the use of data on 10-year moving averages of MRP. I find that criticism peculiar. If we use annual data, which is more common, the volatility would be higher. Moving averages reduce volatility. Further, 10-year periods are arguably the appropriate time period to consider. For purposes of the PSTN and most regulatory estimates of WACC, the CAPM is effectively applied with a 10-year time horizon.

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

61   In my section on the reasonableness of the ACCC's position, I demonstrate the substantial volatility in recent MRP. Ockerby's dismissal of my position is largely based upon his view, with which I concur, that the MRP is highly volatile. That point is also noted when I discuss an estimate of the one standard deviation range for an estimate of MRP.

62   Ockerby cites the following evidence on MRP from a report by Gray and Officer (paragraph 26).

Length of period	Period	MRP
30 years	1975-2004	7.70%
50	1955-2004	6.43%
75	1930-2004	6.58%
100	1905-2004	7.15%
120	1885-2004	7.17%

63   He notes that the choice of period has an impact on the historic MRP. That is a well established fact, and the reason why I do not believe there is enough relevant MRP data in Australia subsequent to the relaxation of controls (i.e., from around the mid-1980's) to form an informed view.

Dated 18 September 2006

Professor Robert G Bowman