ACCC's Draft Decision re ARTC's Hunter Valley Coal Network

Response re WACC Issues

March 2010

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Executive Summary

This report has been prepared by Synergies Economic Consulting (Synergies) at the request of the Australian Rail and Track Corporation (ARTC). The report is in response to the ACCC's Draft Decision in relation to the Hunter Valley Coal Network access undertaking. We have been requested to respond to four Weighted Average Cost of Capital (WACC) parameters proposed by the ACCC.

We have previously compiled a report in support of ARTC's proposed WACC. The report was lodged with the ACCC on 23 April 2009. It is not intended to reproduce information already submitted in detail here but to respond to particular parameter estimates and issues raised by the ACCC.

The four parameter issues raised in this report are those relating to:

- the calculation of the debt margin
- the value of gamma
- the market risk premium, and
- asset beta.

Debt Margin

Due to limited independent and credible data, we propose an alternate method that may be used for the calculation of the debt margin. This method is the extrapolation of the seven year Bloomberg BBB yield to a ten year estimate.

Value of gamma

The ACCC has suggested a value of gamma of 0.65. The rationale for this value is based upon the results of two particular studies. We question the applicability of one of the studies and report updated results for the other study. We maintain the view that the most appropriate value for gamma is zero.

Market risk premium

Long term studies based upon historical data suggest an estimate for a forward looking market risk premium of close to 7%. Survey type studies result in estimates that are both volatile and predictable. Given the variety of studies over various time periods results in a range of outcomes that are plausible. The ACCC has applied the bottom

end of a plausible range. Justification for not uplifting the estimate is that the global financial crisis has passed and the market is stable. Evidence has been provided to refute the 'stable market' claim. Given current market conditions, an uplift to the market risk premium is still required.

We maintain our view that the appropriate value for the market risk premium is between 6% and 7%. If the implications of the global financial crisis for the risk premium required be investors are considered, at minimum, the value should be selected from the mid-point of this range. This view is consistent with the views expressed by the AER in a draft decision in February 2010.

Asset beta

We previously provided a detailed analysis of a plausible range for an asset beta of between 0.5 and 0.6.The ACCC has taken an estimate that is at the bottom end of that range. Of the risks faced by ARTC, one type is stranding risk, which is asymmetric in nature. As set out in our previous report (and acknowledged by the ACCC), this type of risk is best reflected in the cash flows. We propose a methodology that can be used to estimate the asymmetric risk. In the absence of such an adjustment, we maintain our view that an uplift to the asset beta to compensate for this risk is warranted.

Contents

1 Introduction

ARTC has requested Synergies Economic Consulting (Synergies) to respond to the ACCC's Draft Decision[1] in relation to the Hunter Valley Coal Network access undertaking. In particular, we have been requested to respond to certain Weighted Average Cost of Capital (WACC) parameters proposed by the ACCC.

The case for ARTC's proposed WACC is detailed in the access undertaking application for the Hunter Valley Rail Network, lodged with the ACCC[2] on 23 April 2009. The access undertaking application included an accompanying report by Synergies, which was prepared in April 2009 (April 2009 Report). It is not intended to reproduce information already submitted in detail here.

In this response to the Draft Decision, four particular WACC issues are addressed. These issues relate to:

- the debt margin
- the value of gamma
- the market risk premium estimate, and
- the asset beta.

Section two provides details regarding the calculation of the debt margin. The approach suggested is justified given the uncertainty surrounding readily available credible data. Section three examines the issues associated with the ACCC's decision on gamma and concludes that it should be set at zero. Section four provides details regarding the current state of the Australian economy, warranting an uplift to the market risk premium. Section five considers the issues associated with the asset beta and compensation for stranding risk. Section six concludes the report.

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1 ACCC (2010) Australian Rail Track Corporation Limited, Hunter Valley Coal Network Access Undertaking Draft Decision, 5 March 2010

2 Lodged for assessment under s.44ZZA of the Trade Practices Act 1974 (the Act)

2 Debt Margin

2.1 Background

The ACCC considered the appropriate methodology to be applied to estimate the debt margin. The methodology requires the determination of a notional credit rating that reflects the default risk associated with the regulated business operations. The debt margin is then estimated based on the difference between the yield for corporate bonds with the assumed notional credit rating and the risk-free rate.

The ACCC accepted ARTC's proposed BBB credit rating. The debt margin is to be estimated based on a ten year term to maturity, which is consistent with the maturity proposed for the risk free proxy. Having established this, the question becomes how to estimate the ten year yield and hence debt margin.

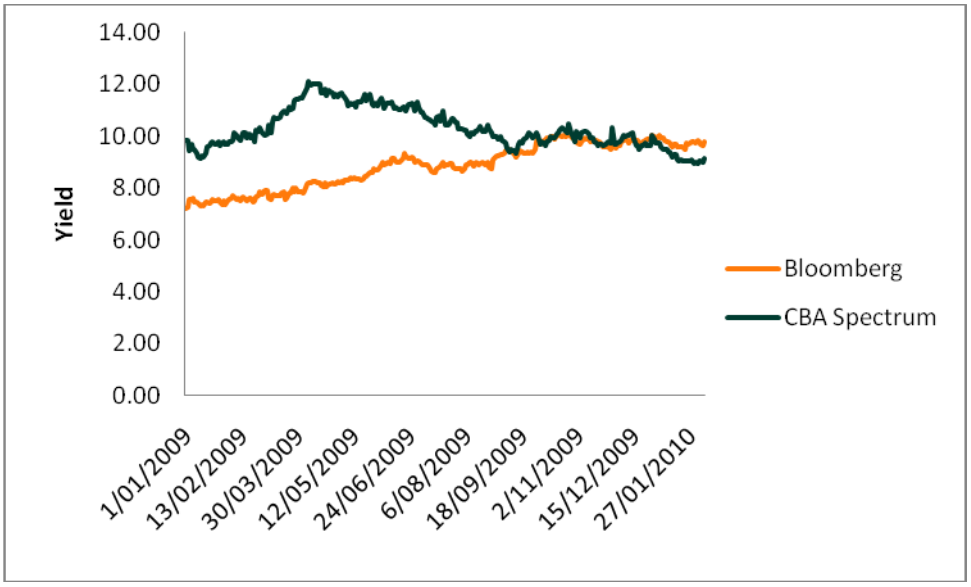
2.2 Available proxies

There are two main data providers being Bloomberg and CBA Spectrum. Historically both have provided independent market data for the relevant ten year yields. When the debt market was more liquid, the difference between the yields quoted by the two data providers was small and inconsequential.

Since the subprime mortgage crisis, there has been a decrease in the liquidity in the long term debt market. This situation was exacerbated with the deepening of the global financial crisis. There is no ten year BBB debt currently on issue in Australia and this has been the case for some time.

Since the global financial crisis, the difference in yields between the two providers can be large as displayed in Figure 1. In April 2009 CBA Spectrum was 391 basis points higher than Bloomberg and in January 2010 Bloomberg was 87 basis points higher than CBA Spectrum. The difference in yields is due to selective sampling, small data sets and the differences in the method of calculation, noting that the details of the methodology employed by each provider in estimating their fair value estimates are not known.

Figure 1 10 year BBB Yields: January 2009 to February 2010



Data source: Bloomberg and CBA Spectrum

CBA Spectrum

CBA Spectrum still publishes a ten year rate, but it is estimated based on yields on shorter maturity instruments. The method that CBA Spectrum uses to construct its yield curve from these shorter term yields is not known. A major problem with using this service is that it is only available to CBA customers and hence is not readily accessible.

Bloomberg

Bloomberg ceased publishing ten year BBB yields in October 2007. An alternative approach that was used in the April 2009 Report was to extrapolate eight year BBB yields by adding the margin between the eight and ten year A rated bond yields, which is the approach that had most commonly been applied by regulators at the time. This approach was acceptable to the ACCC in the Draft Decision, although it noted that as the longest-dated bond published by Bloomberg can change depending on data availability, it is not necessarily practical to specify maturities:[3]

> Therefore, the ACCC considers that it is likely to be appropriate for ARTC to:
>
> - take the longest maturity BBB bond fair yield estimate available from Bloomberg; and

[3] ACCC (2010), page 543.

- add to this an estimate of the term premium going from the maturity of the longest dated BBB bond out to ten years as estimated from the next (higher) credit rating Bloomberg fair yield curve quoted out to at least ten years.

In August 2009 (after the submission) Bloomberg ceased publishing eight year BBB, eight year A and ten year A yields. The longest dated BBB yield is currently seven years and the yield closest to BBB with a seven and ten year maturity is rated AAA.

The AAA yield is estimated from bonds issued by financial institutions that have a Commonwealth Government Guarantee (which has the effect of providing the bonds with a AAA rating). The Commonwealth Government will cease to guarantee the financial institutions after March 31 2010. It is unknown what yields will be published by Bloomberg after the guarantee ceases and therefore what yields will be available to estimate the BBB yield.

2.3 Solution

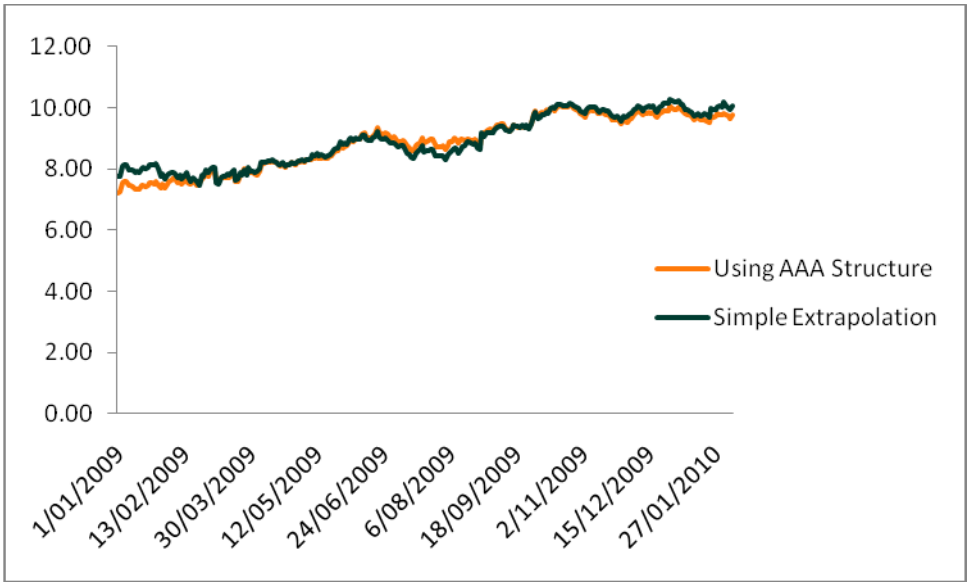
There is no clear solution to the problem of the non-existence of a ten year BBB yield that is provided by an independent service provider based upon transparent market data. The question therefore largely becomes one of how to extrapolate observed yields on actual issues (or how to 'fit the curve' to the available data), which will only be from shorter terms, to estimate a ten year BBB rate.

In estimating a ten year BBB yield using Bloomberg, two methods could be applied. The first is that accepted by the ACCC but changes through time with the availability of differing yield curves. Currently the longest available Bloomberg BBB rate is seven years. The only credit rating category for which ten year yields are published is AAA. As stated above, the problem with this approach is that it is only banks that are AAA rated due to the Commonwealth Government guarantee. At the end of March 2010, the Commonwealth Government will withdraw its guarantee and hence Bloomberg may cease publishing ten year AAA yields. It is possible that ten year AA yields will be available but this is uncertain (and considered unlikely, noting that these yields have not been published by Bloomberg since 2005). Given the uncertainty, an alternate approach is preferred.

An alternate method is simple linear extrapolation. This assumes that the slope of the yield curve is constant from five years to ten years. For example, based on the BBB data published by Bloomberg, its indicative seven year rate could be extrapolated based on the difference between the five and seven year BBB rate.

Figure 2 illustrates the two different estimates and it can be seen that both approaches would have provided similar results in recent times.

Figure 2 Bloomberg Estimates: January 2009 to February 2010



Data source: Bloomberg

The average debt margin from January 2009 to February 2010 using the two Bloomberg approaches is displayed in Table 1. The simple extrapolation approach results in an average for the period of 383 basis points, while the average debt margin using the term structure from AAA yields was 371 basis points. This confirms that the difference between the two approaches has been minimal.

Table 1 Long term average yields: January 2009 to February 2010

Method	Debt Margin
Using AAA Yields	371 bps
Simple Extrapolation	383 bps

Source: Bloomberg

Prior to the cessation of publication of Bloomberg's long term BBB and A fair value bond yields, the estimates were usually based on observed yields on bonds with considerably shorter maturities. The alternative of extrapolating a seven year rate to estimate a ten year rate is in effect similar to what Bloomberg did in estimating a ten year rate based upon bonds of shorter maturities, although the actual method that Bloomberg has applied is unknown.

2.4 Conclusion

Particularly given the issues with the accessibility of CBA Spectrum data, we suggest the use of Bloomberg data to estimate the debt margin. The difference in using either

the yields on bonds with the next closest rating yield or the simple extrapolation is minimal. Given the uncertainty regarding the availability of other observable yield curves, extrapolating the seven year BBB yield based on the margin between five and seven years is preferred.

3 Gamma

3.1 Background

The cost of capital is traditionally calculated on an after-corporate tax basis. With dividend imputation, corporate tax paid prior to the distribution of dividends can be credited against the tax payable on the dividends at a shareholder level.

In other words, corporate tax is a prepayment of personal tax withheld at a company level. Gamma is the proportion of the corporate tax which can be claimed as a tax credit against personal tax, that is, it is the value of personal tax credits. Once this value has been determined, then either the WACC or the cash flows to which WACC is applied is adjusted to reflect the value of the tax credit to investors.

Gamma is the product of two inputs which must be estimated:

- the proportion of tax paid that has been distributed to shareholders as franking credits (the distribution rate); and
- the value (theta or utilisation rate) the marginal investor places on $1 of franking credits, referred to as the value of franking credits.

More precisely the AER has stated that:

> The generally accepted regulatory approach to date in Australia has been to define the value of imputation credits in accordance with the Monkhouse definition.[4]

Under the Monkhouse definition for gamma:

- the imputation payout ratio (or the distribution rate) is the face value of imputation credits distributed by the firm as a proportion of the face value of imputation credits generated by the firm in the period; and
- the utilisation rate (theta) is defined as the value of distributed imputation credits to investors as a proportion of their face value.[5]

[4] Australian Energy Regulator (2009), Draft Decision Queensland Draft Distribution Determination 2010–11 to 2014–15, 25 November , p. 198.

[5] P. Monkhouse (1997), 'Adapting the APV Valuation Methodology and the Beta Gearing Formula to the Dividend Imputation Tax System', Accounting and Finance, 37, vol. 1,pp. 69-88

What is important with the definition is the distinction between face value and value. Value (with reference to the calculation of theta) in itself would normally be interpreted as market value while face value is not a market value concept. This distinction is most important as the two studies relied upon by the ACCC, and as discussed below, do not estimate the same variable. One is an estimate of market value while the other is an estimate of face value. As the two studies do not measure the same variable they cannot be treated equally as the ACCC does.

The value of franking credits is determined at the level of the investor and is influenced by the investor's tax circumstances. The value of gamma is between zero (no value from franking credits) and one (full value of franking credits). As outlined above, there are two components to gamma and these are the payout ratio and the utilisation rate. While the payout rate can be generally observed from taxation statistics, the value of franking credits (theta or utilisation rate) cannot be directly observed.

3.2 ACCC approach

To estimate theta the ACCC relied upon two studies, both of which were also relied upon by the Australian Energy Regulator (AER) in its *Statement of Regulatory Intent* in relation to the WACC to apply to electricity distribution and transmission businesses (the SoRI). The studies were by Beggs and Skeels[6] and Handley and Maheswaran[7]. The Beggs and Skeels (2006) study considers the impact of cash dividends and franking credits on ex-dividend share price adjustments to estimate theta. This study is an attempt to use market data to estimate the effect on value when dividends that have franking credits are paid.

The second study referred to by the ACCC is the tax statistics study by Handley and Maheswaran (2008). This study in no way attempts to estimate value and is therefore inconsistent with the Monkhouse (1997) definition. This study measures the extent to which imputation credits have reduced personal taxation liabilities.

Both of the studies relied upon by the ACCC, as well as its assumption in relation to the the payout ratio, will be examined in turn.

[6] D. Beggs and C. Skeels (2006), 'The Market Arbitrage of Cash Dividends and Franking Credits', 2006, The Economic Record 82, pp. 239-252

[7] J. Handley and K. Maheswaran (2008), 'A measure of the efficacy of the Australian Imputation Tax System', 2008, The Economic Record, 84, pp. 91

3.3 Distribution rate or payout ratio

Hathaway and Officer (2004)[8] estimated the payout ratio using taxation statistics. They found that the average distribution rate for of all Australian companies for the period 1988 to 2002 was 71%. The ACCC also refers to a study prepared for it by Lally (2002)[9], who used financial statements and examined only eight companies, being the largest listed companies in Australia. Lally estimated the payout ratio to be 100%. One of the reasons for the differences in results between the two studies is as a consequence of both the sample size and the source of data.

Importantly, of the two studies, it is the Hathaway and Officer (2004) study that is consistent with the Monkhouse (1997) definition of the payout ratio. The payout ratio requires knowledge of franking credits created and distributed. Franking credits are as a result of taxation liabilities paid. Corporate taxation can be accurately estimated from taxation statistics as estimated by Hathaway and Officer (2004).

The payout can only be inferred from financial statements as estimated by Lally (2002). Financial statements are general purpose statements that comply with Accounting Standards. Taxation liabilities are determined by reference to the Income Tax Assessment Act[10] (ITAA). Accounting income differs from taxable due to both permanent and timing differences. Estimating taxation credits as required by the Monkhouse (1997) definition requires the use of a number of assumptions if estimating a taxation number from accounting data. The estimate may be very different to the actual credits created and distributed.

The ACCC also referenced a report by Handley (2009), which was also relied upon by the AER.[11] Handley also accepts that firms do not in fact distribute 100% of their free cash flow:

> It is again repeated that the practice that firms usually do not distribute 100% of the free cash flow and imputation credits generated each period is not in dispute.[12]

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8 N. Hathaway and R. R. Officer (2004), The Value of Imputation Tax Credits, Report, Capital Research Pty Ltd, November 2004.

9 M. Lally (2002), The Cost of Capital Under Dividend Imputation, A Report Prepared for the ACCC, 2002.

10 Income Tax Assessment Act 1997.

11 J. Handley (2008), A Note on the Valuation of Imputation Credits, report prepared for the AER, Final, 12 November.

12 J. Handley (2009), Advice on Gamma in Relation to the 2010-2015 QLD/SA Electricity Distribution Determinations, Memorandum to the AER, 20 October 2009, p. 10.

However, even though he accepts payout ratios of less than 100%, Handley[13] (2008) advised that the payout should be set at 100% based upon the assumption that a firm will distribute 100% of its free cash flows. Handley's argument is that retained cash flows can be reinvested and earn the firm's cost of capital.

Handley's argument cannot be creditable if firms do not distribute all profits as dividends and do not earn a cost of capital rate of return on undistributed credits. This is examined next.

Credits will be distributed but importantly, not in the near future. Observations of payout ratios since the introduction of dividend imputation in 1987, show that the payout ratio has been consistently below 100%. Companies have consistently retained franking credits each and every year since the commencement of dividend imputation. As companies have always retained credits, one cannot assert a 100% payout ratio. The effects of the time value of money and discounting results in the retained credits having a negligible value today.

Any argument that retained cash flows can be reinvested and earn the firm's cost of capital are irrelevant to the value of the imputation credits. Imputation credits cannot be reinvested. They are only of value to resident shareholders once the dividends are distributed. Shareholders are not indifferent between distributed and undistributed credits as it is only distributed credits that are of value to them.

Additionally, the ACCC make reference to Officer (1994)[14] stating that the payout ratio was 100%. Officer's (1994) framework assumes a perpetuity, but this does not imply that a 100% payout ratio is required. What is required is a constant payout rate and 71% is suitable. Examining actual payouts through time, 71% is not an unreasonable estimate of actual yearly payouts.

We therefore consider that the he appropriate payout ratio is 71%, as established by Hathaway and Officer (2004).

3.4 Utilisation rate or theta

The only study relied upon by the ACCC that attempts to estimate theta and is consistent with the Monkhouse (1997) definition for theta, is the study by Beggs and Skeels (2006).

[13] J. Handley (2008).

[14] R. Officer (1994), The cost of capital under an imputation tax system, Accounting and Finance 34, 1–36.

Beggs and Skeels

Significant concerns were raised with the Beggs and Skeels (2006) study as part of the AER's review. This study sought to estimate a value for theta[15] over a number of different sub-periods or regimes. Different estimates were produced for each sub-period. There was a change in the taxation law in 2000, which allowed a full cash rebate to resident investors for unutilised credits. Emphasis appears to be placed upon their estimate for the period 1 July 2000 to 10 May 2004, which was the end date of their study. The estimated value of theta over this period was 0.572. Beggs and Skeels suggest that there was a structural break in the estimate due to the change in taxation laws and that the value of theta has increased since that time.

A report by SFG Consulting[16] to the AER found that the supposed evidence of a structural break following the year 2000 tax law change was due to sampling error. Hence, there is no robust evidence to demonstrate that such a break has occurred (and accordingly, that the value of theta has increased since this time).

Additionally, SFG was able to replicate Beggs and Skeels' results over that same time period. However, when outliers were excluded[17] (being only eleven out of 1,389 observations), the value of theta fell to 0.19. When the sampling period was extended to 30 September 2006 (with no adjustments to the sample or methodology used by Beggs and Skeels (2006)) the estimate of theta changed from 0.572 to 0.37.

As part of its regulatory proposal lodged following the conclusion of the AER's Statement of Regulatory Intent, ETSA Utilities also submitted a paper by one of the authors of the study the AER relied upon (Skeels).[18] Skeels was asked to review the extension of the Beggs and Skeels (2006) analysis conducted by SFG and submitted to the AER, as cited above, as well as the AER's subsequent response to that analysis in its final SoRI. As part of its review of the SFG analysis, Skeels directed a number of questions to SFG, which were then responded to.

On reviewing the AER's dismissal of the SFG Consulting study, Skeels concluded that:[19]

[15] The value of gamma is the product of theta and the assumed distribution rate.

[16] SFG Consulting (2009b), The Value of Imputation Credits as Implied by the Methodology of Beggs and Skeels (2006), Report Prepared for ENA, APIA and Grid Australia, February.

[17] This was done to improve the consistency of estimates through time.

[18] C. Skeels (2009), A Review of the SFG Dividend Drop-off Study, 28 August.

[19] C. Skeels (2009), p.4.

> Many of the criticisms raised by the AER were little more than allusions to potential problems with the SFG analysis. In some cases I found that these allusions were ill-founded and readily dismissed. In other instances the appropriate response was to rework the model and to actually establish whether the concern was valid or not. This latter class of concerns was incorporated into the questions posed to SFG. I found their response to be convincing in as much as the potential problems were demonstrated to have little or no material impact on the results.

Skeels noted that some of the concerns that had been raised about the SFG study were more material. SFG responded to these issues and produced revised estimates. SFG arrived at a value of theta of 0.23. Skeels stated:[20]

> ...the SFG estimate of theta of 0.23 represents the most accurate estimate currently available.

Skeels concludes as follows: [21]

> It is clear that the more recent data used in the SFG results presented in Appendix I favour an estimate of theta that is lower than that of 0.57 which was obtained by Beggs and Skeels on the basis of less recent data. However, it might be argued that the minor methodological differences that remain between the methodology of Beggs and Skeels (2006) and that of SFG bias their estimate of theta downwards... Were such a position to be taken then, in my opinion, a compelling case can be made that the empirical evidence overwhelmingly supports the notion that the true value of theta lies between the SFG estimate of 0.23 and the Beggs and Skeels (2006) estimate of 0.57, and that in all probability it lies closer to 0.23 than 0.57.

There is significant doubt over the reasonableness of assuming that 0.572 is a reasonable estimate for theta. If reliance is to be placed upon Beggs and Skeels (2006) with the exclusion of the results of other reputable steadies as detailed in the Synergies April 2009 submission, the maximum value that theta could take is 0.37. This is the value using the Beggs and Skeels (2006) approach but extending the data set (which increased the number of observations and included more recent data).

Handley and Maheswaran

With the Monkhouse (1997) definition for theta, what is important with the definition is the distinction between face value and value. As stated earlier, theta is defined as the value of distributed imputation credits to investors as a proportion of their face value.

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[20] C. Skeels (2009), p.5.

[21] C. Skeels (2009), p.5.

With reference to the calculation of theta, value is interpreted as market value while face value is not market value.

This distinction is important as Handley and Maheswaran (2008) are not estimating the same variable as the Beggs and Sheels (006). The two methods are entirely different.

Beggs and Skeels use observed market values to value credits. They attempt to measure the market value of the ability to offset credits by using market data to estimate the effect on value when dividends that have franking credits are paid.

Handley and Maheswaran measure the extent to which the amount of (face value of) distributed imputation credits have reduced personal taxation liabilities. The study measures the proportional offset of personal taxation liabilities given the fact that there is a taxation credit attached. This approach ignores completely the fact that risk averse investors are placed 'at risk' to earn dividends. Being placed 'at risk' means that there is not a one-for-one relationship between the cost of acquiring shares and the probability of earning a return on those shares. Ignoring the risk-return relationship that underpins much of modern finance theory overstates the value of theta.

The Handley and Maheswaran approach measures face value and is inconsistent with the Monkhouse definition.

An additional consideration in the case of taxation credits is that market values must be less than face values. As investors are placed at risk, risk averse investors will place a discounted value upon the face value of the credits as a consequence of risk. The market value of taxation credits would be less than the face value. Any attempt to measure theta using face values overstates the value of theta as defined by Monkhouse.

The tax statistics approach of Handley and Maheswaran is not a value-based approach. It is a ratio of the claimed imputation credit to the created and distributed imputation credit. It is not a proxy for market value as it does not attempt to be a measure of, or be reflective of, this value.

We therefore disagree with the ACCC's statement:

> This study has a sound conceptual basis and provides a direct (rather than inferred) estimate of the value of imputation credits across the Australian economy. AER considered that the results of this study provide a reasonable upper-bound estimate of theta.[22]

[22] ACCC (2010) p577

As explained above, the Handley and Maheswaran estimate is inconsistent with the Monkhouse definition and therefore is not a measure of theta. It must overstate any possible value that theta must take as it ignores the fact that investors are placed 'at risk'. It does not provide a reasonable estimate of theta as it does not measure theta.

3.5 Conclusion

Gamma is the proportion of the corporate tax which can be claimed as a tax credit against personal tax, that is, it is the value of personal tax credits. It has two components being the proportion of tax paid that has been distributed to shareholders as franking credits (the distribution or payout rate) and the value (theta or utilisation rate) the marginal investor places on $1 of franking credits.

Hathaway and Officer established that a reasonable estimate of the first component of gamma being the payout ratio is 71%. It is unreasonable to apply a payout ratio of 100% as this contradicts the empirical evidence. Additionally 100% is not justifiable on the basis of a theoretical argument as any such argument must ignore the time value of money when assuming that credits must at some time be distributed. Ignoring the time value of money contradicts generally accepted finance theory.

The second component of gamma is theta. In its April 2009 report, Synergies provided evidence of numerous reputable studies that valued theta at 0% and therefore gamma of 0%. The ACCC has relied upon a study by Beggs and Skeels (2006) which when either validly updated to increase the data set or eliminate outliers reduces the estimated value of theta. Removing outliers reduces the theta from 0.572 to 0.19 and expanding the data set reduces the theta from 0.572 to 0.37. In either case the value of theta implies a value for gamma that is well below 0.65 and indeed below the established regulatory precedent of 0.5.

It is not appropriate to rely upon the study by Handley and Maheswaran (2008) when attempting to estimate theta. The Handley and Maheswaran study does not measure theta as it is inconsistent with the Monkhouse definition of theta. It does not consider the value placed upon the credits by shareholders. It simply measures the face value of available credits.

Synergies still maintains that a reasonable estimate of gamma is zero. At minimum, given the credible Australian studies that have showed that the value of gamma is zero, or close to zero, this should at least be considered to be within the bounds of a reasonable range.

4 Market risk premium

4.1 Background

The Market Risk Premium (MRP) is the amount an investor expects to earn from a diversified portfolio of investments (reflecting the market as a whole) that is in excess of the return earned on a risk-free investment. The key difficulty in estimating the MRP arises from it being the expected return on the market. As it is an expected return, it is therefore not directly observable. Based on the April 2009 Report, ARTC proposed a MRP of between 6% and 7%. The ACCC rejected this and is proposing a value of 6%, which it considers is "the best long term estimate under stable capital market conditions."[23] It does not consider that an adjustment is required to the MRP for the impacts of the global financial crisis (noting the increase to 6.5% that was applied by the AER) as it considers that conditions in the global economy (and financial markets) have improved.

4.2 Global financial crisis

Most long-term studies of historical returns produce estimates well in excess of 6% - most likely around 7% - which shows that the assumption that has been consistently adopted by regulators has been too low. Following the global financial crisis, expectations for the MRP suggest that it may be even higher, at least in the short to medium-term.[24] We are therefore of the view that a range of between 6% and 7% remains appropriate.

The ACCC is also of the view that general market conditions may justify an increase in the market risk premium. For example, the ACCC has justified the AER's decision of 6.5% during a time of economic instability:[25]

> The ACCC considers that the AER's view of a MRP above 6 per cent was appropriate when taking into account the uncertainty with the global financial crisis at that time.

[23] ACCC (2010), p.569.

[24] B. Officer & S. Bishop (2009), Market Risk Premium: Further Comments, Prepared for Energy Networks Association, Australian Pipeline Industry Association and Grid Australia, January.

[25] ACCC (2010), p.568.

The ACCC confirms that view and states that 6% is a reasonable estimate in stable economic conditions: [26]

> …the ACCC considers the previously adopted MRP of 6 per cent is the best forward looking long term estimate under stable capital market conditions.

The issue is whether the economy can be considered to be stable. The views of those who have the major influence in the world and domestic economies need to be considered.

World Bank

The World Bank believes that the economy is not yet stable. On January 21 2010 the World Bank reported: [27]

> The acute phase of the financial crisis has past and a global economic recovery is underway. However, the recovery remains fragile and is expected to slow in the second half of 2010 as the growth impact of fiscal and monetary measures wane and the current inventory cycle runs its course.
>
> Although global growth is expected to return to positive territory in 2010, the pace of the recovery will be slow and subject to uncertainty.

This view of the World Bank clearly indicates that the economy is not yet in a stable condition. There is still great uncertainty, any recovery will be slow and the economy remains fragile.

Reserve Bank of Australia

The Assistant Governor made the following statement in February 2010 which indicated that there is still great uncertainty in the economy: [28]

> Looking forward, the central scenario for most of these economies remains a subdued recovery. It is likely that many of them will continue to be weighed down by the desire of households to reduce leverage and increase savings. And with considerable excess capacity, a strong recovery in business investment also appears unlikely, at least in the near term. Many of the advanced economies have weak

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[26] ACCC (2010) p. 569

[27] Prospects for the Global Economy Global Economic Prospects 2010: Crisis, Finance, and Growth. World Bank January 21, 2010

[28] Philip Lowe, Assistant Governor (Economic), The Current Economic Landscape, Committee for Economic Development of Australia (CEDA) Economic and Political Overview, Sydney - 18 February 2010

> financial sectors with little appetite for risk. Many also face very significant medium-term fiscal challenges that need to be addressed. If history is any guide, overcoming these various balance-sheet headwinds will take considerable time.

The Reserve Bank clearly indicates that the economy, while in a recovery mode, is not stable. The future is uncertain and recovery will take considerable time.

Federal Reserve

The Federal Open Market Committee of the Board of Governors of the Federal Reserve System reported: [29]

> FOMC participants agreed that economic recovery from the recent recession was under way, but that they expected it to proceed at a gradual pace, restrained in part by household and business uncertainty regarding the economic outlook, modest improvement in labor markets, and slow easing of credit conditions in the banking sector.

While the evidence is certainly promising compared to the conditions observed during the global financial crisis, those organisations that have the major influence over the economy still today express the view that the global economy is not yet stable.

Federal Treasurer – Wayne Swan

It was reported on the front page of the Australian Financial Review on 31 March 2010 that:

> Treasurer Wayne Swan insisted on the continued fragility overseas after the global economy 'fell off a cliff' last year.

The Federal Treasurer is currently of the view that the global economy continues to be fragile.

4.2.2 Australian Energy Regulator

The AER has also had to consider the extent to which its assumed value of 6.5% remains reasonable in the current environment. In its most recent decision released in February 2010, the AER stated: [30]

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[29] Part 1: Overview: Monetary Policy and the Economic Outlook Monetary Policy Report submitted to the Congress on February 24, 2010, pursuant to section 2B of the Federal Reserve Act

[30] AER (2010) Draft decision – Public Jemena Access arrangement proposal for the NSW gas networks 1 July 2010 – 30 June 2015 February 2010 p. 132

> The AER considers that prior to the onset of the GFC, an estimate of 6 per cent for the forward looking long-term MRP was the best estimate. However, following the onset of the GFC, the AER notes the changed market conditions indicate an increase in the MRP, although it does not consider there is sufficient evidence to determine if this is a temporary or permanent change. The AER considers that in either case, given the uncertainty in the future outlook and consistent with its findings in the WACC review, an MRP of 6.5 per cent is appropriate for the purpose of a forward looking estimate commensurate with prevailing market conditions.
>
> The AER considers that an MRP of 6.5 per cent provides the best estimate arrived at on a reasonable basis of the MRP in the prevailing market conditions, and therefore it accepts Jemena's proposed MRP of 6.5 per cent.

The AER expressed the opinion in February that there was still uncertainty in the economy.

4.3 Conclusion

The best estimate of the 'true' long-run market risk premium is the current long-run market risk premium. The MRP is volatile and as such a long-term average needs to be calculated to estimate a meaningful premium. It appears that the period of averaging needs to be at least 30 years and while longer periods change the calculated answer marginally, the advantage of a stable estimate outweigh any disadvantages of the longer time horizon.

Estimates of the MRP in Australia confirm that the value of the MRP has remained well above 6%. Studies over various time periods have consistently produced estimates in the range of 6 to 8%. This is supported by our own analysis, which has shown that the long-term average is close to 7%.

In our view, putting the effects of the global financial crisis aside, a range of between 6% and 7% is a more reasonable estimate of the long-term MRP. With the instability caused by the global financial crisis still in the economy and the financial markets, an MRP from at least the mid-point of this range would be considered conservative.

5 Asset Beta

5.1 Background

In our April 2009 Report, we explained the approach used to estimate the asset beta. Our recommended range of 0.5 to 0.6 was based on a first principles analysis and an examination of comparable companies and relevant regulatory decisions. It was recommended that the estimate was selected from above the mid-point of this range, particularly if ARTC is not to be otherwise compensated for asymmetric asset stranding risk (which is not naturally reflected in a CAPM-derived beta as CAPM assumes returns are normally distributed).

The ACCC has proposed an asset beta from the lower bound of this range, being 0.5. It established an asset beta range between 0.4 and 0.5. The lower bound was based on evidence from AER decisions on utility firms. The upper bound was based on the 2005 decision in relation to QR Network. While the ACCC acknowledges the existence of stranding risk, it does not consider that it is as high as we (and ARTC) have suggested.

In this section we propose to respond to:

- the ACCC's preferred range

the treatment of stranding risk.

5.2 The ACCC's preferred range

The ACCC has based the lower bound of the range on the betas for electricity network businesses. The ACCC has acknowledged that there are differences between electricity and rail, but has not analysed these in any detail. We consider that there a fundamental differences between these industries and the electricity networks are not suitable comparators to rail.

If the ACCC is to reference them as comparators, a more detailed evaluation of the similarities and differences should be undertaken, based on a first principles analysis. This not only enables an assessment of the relevance of this industry as a comparator, but where ARTC might sit relative to those businesses. Instead, the ACCC concludes that these businesses are "marginally less risky" than ARTC however selects its lower bound estimate for ARTC from *below* the mid-point of the range of electricity network asset betas (which it cited as 0.3 to 0.55). It is not clear how the ACCC's assessment that

they are "marginally less risky" sits against the point estimate it has selected for its lower bound.

The upper bound has been referenced to the QCA's 2005 decision in relation to Queensland Rail, where an asset beta of 0.5 was determined. While the ACCC considers that the Central Queensland Coal Network is similar to ARTC (which we would concur with), it has used this estimate as the upper bound (or maximum limit) for ARTC's range.

We note that in the QCA's recent Draft Decision in relation to QR Network (released in December 2009), it has proposed to set its asset beta to 0.45. We have some significant concerns with this decision, which were set out in a report Synergies prepared for QR Network in response to that decision.[31] While we do not intend to address the QCA's decision in detail here, the most significant of our concerns are:

1. *The QCA's proposed **sole** reliance on electricity network businesses as comparators for QR Network.* As set out above, we do not agree that electricity network businesses are appropriate comparators for a heavy haul coal network. Further, in coming up with its beta estimate for these comparators, the QCA referenced data relied upon by the AER in its Final Decision in relation to the SoRI. The reliability of this data has been questioned in that forum, including by the QCA's own consultant (who had recommended QR Network's beta estimate with reference to these businesses).

2. *The QCA's proposal to reduce QR Network's beta because of a perceived reduction in stranding risk.* As has been previously highlighted, the CAPM-derived cost of equity does not reflect compensation for asymmetric risks, including asset stranding. On reviewing previous QCA decisions and accompanying consultant's reports, it was not evident that stranding risk was ever considered to be reflected in QR Network's beta estimate, noting that it had been previously assessed as being "low". It is not appropriate to adjust beta for something that was not previously recognised as being reflected in the beta estimate.

3. *The QCA's proposal to further reduce QR Network's beta because of other factors.* The QCA identified a number of factors that it considered could warrant an even further reduction in the final decision. All of the factors identified by the QCA were identified and analysed in Synergies' report. Again, it was evident that the QCA had either not previously taken these factors into account when assessing

[31] Synergies Economic Consulting (2010), Response to the QCA's Draft Decision, QR Network: Beta Assessment, February.

> beta, or were previously seen as having little impact. It is therefore not considered appropriate to provide a further adjustment to beta for these factors.

We are therefore of the view that the QCA's proposed reduction of QR Network's asset beta has no merit and should not be taken into account by the ACCC.

5.3 Asymmetric Risk

ARTC faces a range of risks that are asymmetric in the sense that the distribution of expected returns are skewed or truncated. This is due to both the inherent nature of events and the fact that returns to regulated infrastructure owners are generally not allowed to exceed the regulated rate of return while remaining exposed to possible downside risks.

In a competitive market, a business has a number of alternatives in relation to risk. A business can treat or mitigate the risk, transfer the risk to another party, terminate the risk by not undertaking the project or take on the risk and price it accordingly. In a regulated environment, the alternatives are likely to be more limited.

The rate of return should compensate infrastructure owners for risk. The rate of return estimated by WACC reflects the systematic risk faced by a listed entity operating in a competitive market. Applying the estimated rate of return using these firms as proxies to a regulated entity faced with asymmetric risks, underestimates the value of the risk for the regulated entity.

To adequately compensate the regulated entity it is necessary to provide an allowance for the estimated impact of asymmetric risk. The ACCC[32] has considered the treatment of stranding risk, a form of asymmetric risk[33]:

> The ACCC considers that if stranding risk is found to be material for the Hunter Valley railway, there should be some accounting for this additional risk. The ACCC considers that stranding risk should generally be accounted for in cash flows.

The ACCC believes that any adjustment for asymmetric risk should be in the cash flows as opposed to an adjustment to beta or Weighted Average Cost of Capital (WACC). We agree that a cash flow adjustment is the most appropriate means of providing compensation for this risk. The way that this could be done is considered

[32] Historically ARTC was regulated by IPART and IPART allowed ARTC to use a WACC from the 75 percentile to allow for stranding/asymmetric risk.

[33] ACCC (2010) page 558

further below. Before a case for compensation can be made, it needs to be established that ARTC is exposed to asset stranding risk.

5.3.1 Issues raised regarding ARTC's stranding risk

While the ACCC acknowledges that ARTC does face some asset stranding risk in relation to its new investments, it has identified a number of factors that it considers will substantially mitigate this risk.

The ACCC examines spot and contract prices for coal and concludes that they are significantly above a level that would justify expansion. ARTC is investing in long-term assets with a long capital recovery period. Further, under the Capital Asset Pricing Model (CAPM) framework, which is generally based on a single period model (at least based on the approach generally taken by most regulators), the horizon of beta analysis is long-term and is not necessarily limited to the length of the regulatory period. Investors in regulated infrastructure will be taking a long-term view. An assessment of asset stranding risk is not limited to whether or not that is likely to occur in two, five, or even ten years time – the assessment needs to consider the probability of asset stranding at any time prior to the full recovery of the capital invested.

The horizon of the ACCC's price analysis is very short. Spot market prices are considered to be of no relevance given they are inherently volatile. Contract prices are renewed on an annual basis. Current spot and contract prices (and even forward prices) do not provide any information regarding the *long-term* outlook for the coal market, nor can they provide investors in supply chain infrastructure with comfort that the assets will not be stranded in the long-term. We consider that it is erroneous to make such an assessment based on current market prices as they have no information content regarding the long-term outlook for the coal market. Similarly, particularly given the possibility that structural change could occur in response to climate change initiatives such as a Carbon Pollution Reduction Scheme (CPRS), caution needs to be exercised in using historical prices to make assumptions about future trends.

A long-term view also needs to be taken when assessing the demand for coal. We do not dispute that the current outlook for the coal market is positive. However, the key issue from the perspective of investors – and hence for beta analysis – is the risks associated with this outlook. In the long-term, there are a number of alternative scenarios for the demand for coal. Again, one of the main factors that will influence these scenarios is climate change. For example, in its submission to the Commonwealth

Government in response to the Green Paper on CPRS, the New South Wales Minerals Council stated: [34]

> There must be a measured start to the scheme, with appropriate transition arrangements that contain the impact on the Australian economy and community living standards, and maintains the international competitiveness of Australian industry. Without such transition arrangements, the competitiveness of emissions intensive trade exposed industries (such as the mining industry) will reduce and lead to a decline in investment, relocation of activity to countries that may not have the same environmental requirements as Australia and potential closure. The impacts of these outcomes will not only be borne by companies, but will be felt by current and future employees, their families and the regional economies depend on those industries.

The ACCC has not addressed the potential impact of climate change on the long-term outlook for coal it any detail. We consider that environmental issues create considerable uncertainty for potential providers of capital to the coal industry and this will continue to be the case in the foreseeable future.

The ACCC also notes the significant complementary investments that are being undertaken in the coal supply chain. This certainly reduces the risk of ARTC building capacity that is not supported by necessary capacity elsewhere in the supply chain. However, this does not mean that other infrastructure providers do not have concerns regarding the stranding risk associated with their investments. We would expect that this has been contemplated in their commercial arrangements, including pricing (the details of which are not known).

We agree that measures such as capital contributions could potentially mitigate some of this risk. However, the ability to seek these contributions does not mitigate the risk – such arrangements need to be successfully negotiated with users before it can be assumed that they will reduce ARTC's risk. This is similarly the case with take-or-pay provisions (which only provide protection for the duration of the contract but not necessarily the economic life of the assets).The ACCC also makes reference to the loss capitalisation approach as a further mitigant against ARTC's stranding risk. In the absence of this ability, ARTC would be considerably riskier than other businesses that are subject to a revenue cap. However, all this approach does in practice is put ARTC in the same position as any other infrastructure provider that is governed by a revenue cap, except that many of these other businesses are usually able to recover any

[34] New South Wales Minerals Council, 2008), Submission on the Commonwealth Carbon Pollution Reduction Scheme, pp.1-2.

foregone revenue within a relatively short time period, or at least within the term of the regulatory period. Given ARTC must defer recovery of this foregone revenue for an indeterminate period, there is a risk that it may not recover it. In our view, the loss capitalisation approach reduces what otherwise would be a fundamental difference between ARTC and other businesses that are subject to a revenue cap. However, ARTC still faces some risk on any revenue that is under-recovered.

5.3.2 Quantifying asymmetric risk

To be able to account for asymmetric risk in the cash flows, it is necessary to first identify the risk and also quantify the effects. Our preferred approach to quantify the asymmetric risk for ARTC is based on the following steps:

- determine a list of risks that may occur that would not normally be faced by the business if it were to operate in a non regulated environment. The risks identified and considered are asymmetric risks that would not normally be faced by a business operating in a competitive environment and as such, would not be reflected in the beta;
- assess the correlation between identified risks in order to ensure the impact of asymmetric risk is not overstated. Ignoring correlations will result in each risk being valued independently;
- consider the probability of occurrence;
- undertake further investigation regarding each of the identified risks, including possible mitigation strategies. For example, if it is possible to either include the effects of the risk within the terms of the contract or to explicitly contract out of the risk, the risk will be disregarded for the purpose of quantifying a regulatory asymmetric risk allowance;
- estimate the value of revenue that a commercial business and a regulated business would earn in compensation for bearing such risks. The difference between these two revenue streams is the economic benefit lost or cost incurred that is asymmetric and is a consequence of regulation;
- undertake a stochastic simulation where a reasonable range of likelihood of occurrences and estimates of the effects of the risks are considered. The simulation output is a distribution of possible outcomes. A conservative estimate of the consequence of the risk is taken from this distribution.

This robust and reasoned approach would allow for the estimation of asymmetric risks. The value of the consequence of the risks could then be included in the cash flows.

This process would require time to properly consider all of the inputs required to be considered. The quantified outcome could then be included in the cash flows. If this cannot be developed and agreed within the required timeframe, the alternative, as previously submitted, would be to allow for an uplift to the asset beta.

5.4 Asymmetric Consequences of Error

As set out in our April 2009 Report, consideration also needs to be given to the asymmetric consequences of error. This is particularly important in the context of beta estimation given it is inherently uncertain. In previous decisions made by IPART in relation to the WACC to apply to the Hunter Valley Coal Network, the WACC was selected from above the mid-point of the range. The primary rationale for this was the recognition of the asymmetric consequences of error.

The estimation of beta is not precise and there is a substantial and unavoidable risk of error. Underestimating beta exposes the community to the risk of materially and adversely affecting welfare by undermining the basis upon which infrastructure providers can reasonably commit to investment. To reduce the consequences of this error, it is necessary to use an estimate above the mid-point of a reasonable range.

5.5 Conclusion

ARTC is faced with a variety of unavoidable risks which are currently not being compensated. The key risks relate to asset stranding risk, which are not typically reflected in the beta estimate. As set out in our previous submission, these risks are best compensated in the cash flows, however in the absence of such compensation, an uplift to the beta should be considered.

The ACCC does not consider that ARTC's stranding risk is material. For the reasons set out above, we do not agree with this assessment. We maintain the view expressed in our previous report, which is that if compensation for asymmetric risk is not otherwise provided, an uplift in beta is warranted to ensure that ARTC has an appropriate incentive to undertake its substantial investment program.

6 Conclusion

This report has been prepared in response to the ACCC's Draft Decision in relation to the Hunter Valley Coal Network. Four key parameter issues were addressed in this report being;

- the calculation of the debt margin
- the value of gamma
- the market risk premium, and
- asset beta.

Due to limited independent and credible data, it is proposed that an alternate method that may be used for the calculation of the debt margin. This method is the extrapolation of the seven year BBB yield to a ten year estimate. The reason for the change in method is due to the uncertainty surrounding the availability of available data.

We have identified a number of issues with the evidence relied upon by the ACCC in coming to a decision on gamma. One of the studies, a tax statistics approach, is inconsistent with the definition of gamma. The second approach, when extended to increase the sample size for the current tax regime, results in a much lower estimate for gamma. Overall, we maintain our view that the appropriate value for gamma is zero.

The ACCC justified not uplifting the MRP estimate as, in their opinion, the global financial crisis has passed and the market is stable. Evidence has been provided to refute the 'stable market' claim. Given current market conditions, an uplift to the market risk premium is still required. A range of between 6% and 7% is a reasonable estimate of the long-term MRP. With the instability caused by the global financial crisis still in the economy and the financial markets, an MRP from at least the mid-point of this range would be considered conservative.

ARTC is faced with a variety of unavoidable risks which are currently not being compensated. The key risks relate to asset stranding risk, which are not typically reflected in the beta estimate. The ACCC does not consider that ARTC's stranding risk is material. For the reasons set out above, we do not agree with this assessment. We maintain the view expressed in our previous report, which is that if compensation for asymmetric risk is not otherwise provided, an uplift in beta is warranted to ensure that ARTC has an appropriate incentive to undertake its substantial investment program.