

The Allen Consulting Group

## **Commentary on the AER's analysis of gearing levels**

**January 2009**

Report to Energy Networks Association, Grid Australia and APIA

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## Executive summary

### Introduction

Under the National Electricity Rules (NER), every five years the Australian Energy Regulator (AER) is required to review the weighted average cost of capital (WACC) parameters that are applied. In August 2008 the AER published an *Issues Paper* that set out the previously adopted value for each key WACC parameter, and key issues for discussion about the methodology that should be applied in estimating that parameter.<sup>1</sup>

Energy Networks Association (ENA), Grid Australia and the Australian Pipeline Industry Association (APIA) engaged the Allen Consulting Group (ACG) to prepare a response to the AER's *Issues Paper*, which was completed in September 2008.<sup>2</sup> In December 2008, the AER released its Proposed Statement of the revised WACC Parameters (Transmission) and Proposed Statement of Regulatory Intent on the Revised WACC Parameters (Distribution), along with its *Explanatory Statement* that set out its preliminary views on the assessment of WACC parameters, including its preliminary views on gearing.<sup>3</sup>

The present paper is a commentary on the views on gearing measurement issues expressed by the AER in its *Explanatory Statement*. While the AER has maintained a 60 percent gearing level, as we had recommended, the AER also raised a number of methodological issues that have broader significance, for example in relation to the measurement of gearing for estimating beta. Our conclusions on this and other key methodological issues are presented below.

### Net debt vs. gross debt

The AER has rejected the use of measures of gearing that use 'net debt' (i.e. gross debt less cash) as the most appropriate measure of the stock of debt. However, when deriving a benchmark gearing level the objective is to ascertain the gearing level that would be chosen by a benchmark efficient network service provider.<sup>4</sup> These businesses are assumed to hold only physical assets. If they held cash they could hold more debt, which is not consistent with the benchmark. Hence, the 'net debt' concept is the appropriate measure of the underlying gearing.

The 'net debt' concept is also the correct approach to apply when measuring gearing for the purpose of estimating the asset beta. This is because the systematic risk of cash is zero, and the observed equity beta will reflect a weighted average of the operating asset beta and the (zero) cash beta. Hence, there would be an inaccurate estimate of the asset beta unless the concept of 'net debt' is applied. We demonstrate this proposition mathematically.

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<sup>1</sup> Australian Energy Regulator (6 August, 2008), *Issues Paper: Review of the weighted average cost of capital (WACC) parameters for electricity transmission and distribution*.

<sup>2</sup> Allen Consulting Group (21 September, 2008), *Review of gearing issues raised in AER Issues Paper*, Report to Energy Networks Association, Grid Australia and APIA.

<sup>3</sup> Australian Energy Regulator (11 December, 2008), *Explanatory Statement: Electricity transmission and distribution network service providers. Review of the weighted average cost of capital (WACC) parameters*.

<sup>4</sup> See AER (11 December, 2008), p.56 and AER (21 November, 2008), *New South Wales draft distribution determination 2009-10 to 2013-14*, p. 190.

**Errors through a failure to account for 'look through' gearing**

The AER's *Explanatory Statement* concludes that the 'look through' gearing analysis provided by ACG "provides a cross check on the estimates derived from Bloomberg and Standard and Poor's data"<sup>5</sup>.

Bloomberg market gearing will be incorrect if there is a need for a 'look through' approach, or there are shareholder loans that are effectively equity. In addition, we disagree with the AER's suggestion that a market-based 'look through' analysis of gearing can be used as a cross check against a book value approach applied by Standard and Poor's. In our opinion, using a book value approach to gearing is not correct (see below).

**Errors through a failure to account for loan notes**

In our original report we agreed with the approach adopted by Standard and Poor's when measuring gearing, which was to remove the book value of loan notes (as part of a stapled security).<sup>6</sup> We agree with the AER that the best approach for sourcing the book value of the loan notes is to take the value from the balance sheet at the balance date. The AER's *Explanatory Statement* appears to endorse the practice of removing the book value of loan notes, but the AER's discussion of book and market values of loan notes clouds the issue.

In the interests of providing clarity, the AER should make a clear statement that it agrees with the approach adopted by Standard and Poor's, that the book value of loan notes, which are part of the traded security, should be removed from the book value of debt when measuring the value of debt.

**Implications for estimation of equity beta**

The preceding findings have implications for the analysis of beta estimates that was undertaken by the AER's consultant, Associate Professor Olan Henry, as his estimates were based on unadjusted Bloomberg market gearing estimates.<sup>7</sup> We have demonstrated that reliance on unadjusted Bloomberg data yields over-estimates of gearing for firms with loan notes (such as Envestra). When 'look through' gearing estimates are required the gearing reported by Bloomberg will be an under-estimate of the 'true' market gearing of the asset as only one level of debt would be observed. However, care needs to be taken with Spark Infrastructure to exclude shareholder loans to the entities below Spark Infrastructure. Hence, these findings indicate that the estimates contained in Professor Henry's advice to the AER will be incorrect in a number of instances.

An additional material error would have been made in relation to Spark Infrastructure as the Bloomberg data did not adjust for the effect of the obligation of Spark shareholders to pay an additional instalment of 54 cents per share, which would have depressed the share price below the value of the ongoing business by this amount.

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<sup>5</sup> AER (11 December, 2008), p.74.

<sup>6</sup> ACG (10 September, 2008), *Review of gearing issues raised in ERA Issues Paper*, Report to Energy Networks Association, Grid Australia and APIA, p. 19.

<sup>7</sup> Olan Henry (28 November, 2008), *Econometric advice and beta estimation*, Report to the Australian Energy Regulator.

***Market values vs accounting values and benchmark comparators***

We are concerned at the AER's contention that the "book value of gearing may act as a proxy for the market value of debt and equity to obtain a benchmark efficient level of gearing".<sup>8</sup>

The NER requires gearing to be measured on the basis of market values, and so the question becomes how to obtain the best estimate of the market value of debt and how to obtain the best estimate of the market value of equity at a point in time. As there are very few firms for which the whole of their debt comprises traded instruments, the book value of debt is typically the best available proxy for the market value of its debt at a point in time. However, the book value of debt often provides a very good estimate of the market value of that debt.

In contrast, for listed firms, the market value of a firm's equity is straightforward to observe. Given that the market value of a firm's equity can be observed directly, there is no justification for using the book value of the firm's equity as an estimate for its market value.

It is true, as the AER argues, that market values of equity can be volatile. Given that levels of debt can only be adjusted over time, this means that the measured gearing level at any time may differ to the firm's target (chosen) gearing level, and so not reflect that firm's view of its optimal gearing level. However, this argues for the use of an average level of gearing over a reasonable period, given that this is more likely to reflect the firm's target. Moreover, averaging over time is also likely to imply that the book value of debt would provide a closer proxy for the market value of debt given that this would include the effect of debt instruments expiring and being realigned to prevailing interest rates.

The implication of the analysis outlined above is that it is incorrect to include GBEs in a sample of benchmark comparators when deriving a benchmark gearing level, as the AER has done. This is because GBEs do not have a market value of equity that can be observed, and hence the measurement of a gearing level that reflects the market value of equity is not practicable.

The AER appears to endorse an approach that would include observations of the book gearing of GBEs to estimate gearing for an efficient benchmark firm. This appears inconsistent with the AER's definition of the 'efficient benchmark firm' as being 'a large listed firm', which in turn has an observable market equity and market gearing level.<sup>10</sup> Therefore, the book gearing of a GBE cannot be used as a proxy for the market gearing of a benchmark efficient network service provider.

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<sup>8</sup> AER (11 December, 2008), p.74.

<sup>10</sup> AER (21 November, 2008), p.190.

## Chapter 1

# Introduction

### 1.1 Background

The National Electricity Rules (NER) provide that every five years the Australian Energy Regulator (AER) must review the weighted average cost of capital (WACC) parameters. The first review is to be concluded by 31 March, 2009. In August 2008 the AER published an *Issues Paper* that set out the previously adopted value for each key WACC parameter, and key issues for discussion about the methodology that should be applied in estimating that parameter.<sup>11</sup>

Subsequently the Energy Networks Association (ENA), Grid Australia and the Australian Pipeline Industry Association (APIA) engaged the Allen Consulting Group (ACG) to prepare a response to the AER's *Issues Paper*, which was completed in September 2008.<sup>12</sup> In December 2008, the AER issued an *Explanatory Statement* that set out its preliminary views on the assessment of WACC parameters, including its preliminary views on gearing.<sup>13</sup>

### 1.2 The Brief and structure of the report

After the publication of the AER's *Explanatory Statement*, ENA, Grid Australia and APIA again engaged ACG to prepare a response and commentary on the AER's position on gearing matters, as expressed in the *Explanatory Statement*.

We agree with the AER's choice of a benchmark gearing level of 60 percent, which corresponds with our own recommendation. However, we do not agree with several aspects of the methodology applied by the AER in reaching its conclusion regarding the benchmark level of gearing, and we are interested in some other methodological issues that have wider relevance.

We do not review all the matters that were raised in our original report on gearing. Instead, we have identified a number of key issues in the AER *Explanatory Statement*, and have structured this report to address each of them in turn. These issues are as follows:

Chapter 2 discusses the issue of whether net debt or gross debt should be applied in the measurement of debt in the WACC formula and for beta estimation. It also examines the issue of 'look through gearing', that is, the existence of multiple layers of debt, and addresses the treatment of loan notes when measuring gearing.

Chapter 3 reviews the issue of whether market values of debt or accounting values of debt should be used in estimating the benchmark gearing level, which leads into the question of selecting appropriate comparator businesses when estimating a benchmark gearing level.

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<sup>11</sup> Australian Energy Regulator (6 August, 2008), *Issues Paper: Review of the weighted average cost of capital (WACC) parameters for electricity transmission and distribution*.

<sup>12</sup> Allen Consulting Group (21 September, 2008), *Review of gearing issues raised in AER Issues Paper*, Report to Energy Networks Association, Grid Australia and APIA.

<sup>13</sup> Australian Energy Regulator (11 December, 2008), *Explanatory Statement: Electricity transmission and distribution network service providers. Review of the weighted average cost of capital (WACC) parameters*.

## Chapter 2

# Net or gross debt, debt structuring and shareholder loans

### 2.1 Introduction

In this Chapter we examine issues relating to the use of net debt or gross debt when measuring gearing, debt structuring and hybrids. Debt structuring refers to the existence of multiple layers of debt in a vertical structure and the need to adopt a 'look through' approach in these circumstances, which attributes debt at different levels in the structure to the ultimate operating asset base. Securities that are termed 'shareholder loans' may have equity characteristics, which would imply that they should be removed from the measure of book gearing.

### 2.2 Net or gross debt

#### *The issue*

Our report measured gearing based on both net debt and total debt. That is,

For the Gross Debt concept:

$$\text{Gearing} = \text{Total Debt} / (\text{Total Debt} + \text{Market Value of Equity})$$

For the Net Debt concept:

$$\text{Gearing} = \text{Net Debt} / (\text{Net Debt} + \text{Market Value of Equity})$$

Where, Net Debt is Total Debt less cash (or cash and marketable securities).<sup>14</sup>

We found that there was little difference in the estimated level of gearing level of 60 percent irrespective of the measurement approach, since the sample of comparable firms held very small levels of cash.

#### *The AER's approach*

The AER noted that we had found the two concepts gave practically the same result, since cash holdings among the comparator firms were low. However, the AER considered that using net debt is likely to be inappropriate since reducing the level of debt by cash and equivalents means that that "this amount must be moved into equity otherwise the level of gearing cannot reach 100 per cent".<sup>15</sup> Hence, if debt was 65, equity was 35 and cash was 5, the gearing ratio would be:

$$\frac{65 - 5}{65 + 35} = 60\%$$

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<sup>14</sup> This is the definition of Net Debt applied by Bloomberg. In our view it is correct only to exclude cash, however this issue is not relevant for most utility firms.

<sup>15</sup> AER (11 December, 2008), p.69.



Since cash is an asset, and could be financed by either debt or equity, the AER argued it is likely to be inappropriate to transfer the amount subtracted from the debt to equity. Therefore, the maximum gearing ratio that could be calculated with the adjustment is:

$$\frac{65 - 5 + 35}{65 + 35} = 95\%$$

On this basis the AER concluded that using net debt to estimate the benchmark level of gearing is inappropriate.

### **ACG's response**

A distinguishing characteristic of equity compared with debt is its permanence, while debt is transient, and generally needs to be re-financed at discrete periods. Hence, while it is possible that a significant amount of cash held by the firm could be used to make a special dividend payment to shareholders and increase gearing, approaching the issue from the shareholder's perspective assumes that the outstanding *debt* could be paid down to the extent of the cash held.

The AER has rejected the use of 'net debt' (i.e. gross debt less cash) as a measure of gearing. However, the key issue here is what gearing level would be chosen by a benchmark efficient network service provider (i.e. the component of a firm's overall operations that is being regulated). These businesses are assumed to hold only physical assets. If they held cash they could hold more debt, which is not consistent with the benchmark. Hence, the 'net debt' concept is a better measure of the underlying gearing. However, the AER is correct that the formula we applied is wrong when the task is to derive a benchmark gearing level. Rather, it is appropriate to assume that the cash is used to retire debt – which requires the value of cash to be removed both from the equity value and book value of debt.

The 'net debt' concept – and the formula we have applied (i.e. not adjusting the market value of equity for removal of cash) - is the correct approach to apply when measuring gearing for the purpose of estimating the asset beta. This is because the systematic risk of cash is zero, and the observed equity beta will reflect a weighted average of the operating asset beta and the (zero) cash beta. Professor Aswath Damodaran notes that:<sup>16</sup>

Intuitively, what you are doing when you use net debt is break the firm into two parts – a cash business, which is funded 100% with riskless debt, and an operating business, funded partly with risky debt.

Mathematically, the proposition that the 'net debt' concept is necessary to obtain a valid estimate of the asset beta for a regulated activity, can be shown as follows:

$$\beta_{estimate}^e = \beta_{activity}^e \cdot \frac{E-C}{E} + \beta_{cash}^e \cdot \frac{C}{E}$$

Where,

$\beta_{estimate}^e$  is equity beta of the estimate

<sup>16</sup> Aswath Damodaran (2002), *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset*, Wiley Finance, New York, (University Edition) p.398.

$\beta_{activity}^e$  is equity beta of the activity

$\beta_{cash}^e$  is equity beta of cash

E is value of equity

D is value of debt

C is value of cash

Since,  $\beta_{cash}^e = 0$

$$\beta_{activity}^e = \beta_{estimate}^e \cdot \frac{E}{E - C}$$

$$\beta_{activity}^e = \beta_{estimate}^e \cdot \frac{E}{E - C} \cdot \frac{E - C}{E - C + D}$$

$$\beta_{activity}^{asset} = \beta_{estimate}^e \cdot \frac{E}{E + (D - C)}$$

Hence, estimates of the asset beta for the activity would be inaccurate unless the concept of 'net debt' ( $D - C$ ) is applied in measuring the gearing levels of benchmark comparator businesses. This is because the presence of large cash reserves will weight the estimate of the equity beta downwards (since the equity beta of cash is zero) unless this effect is eliminated by the use of the 'net debt' concept.

To eliminate doubt, there are two formulae that must be considered.

- When considering the benchmark gearing it is necessary to deduct cash from debt and the equity market value (we assume that the cash is used to retire debt).
- When measuring equity betas, however, the 'net debt' concept should be applied without an adjustment to the equity market value.

## 2.3 Debt structuring

### *The issue*

In ACG's report we noted that in some cases it is necessary to obtain a 'look through' approach to gearing, which takes account of vertical ownership structures with debt located at different levels in the structure. For example, we showed with the example of Spark Infrastructure that there are two companies CHEDHA and ETSA at the base, which have their own levels of debt, and are 49 percent owned by Spark Infrastructure. Spark Infrastructure, in turn has its own debt.

Another complication in Spark Infrastructure is the shareholder loans that are treated as debt items in the balance sheets of CHEDHA and ETSA. These loan notes have the economic characteristics of equity rather than debt, since they cannot be traded separately from the equity portion of the stapled security that they are attached to. Like equity the earning stream of the loan notes is subordinated to the debt. In these circumstances it is appropriate to subtract the value of the loan notes from the value of the debt.

Looking just at the gearing level of Spark Infrastructure would under-estimate the level of gearing, and not adjusting for the value of the loan notes would over-estimate the level of gearing that is associated with ownership of a share in Spark Infrastructure. Since the ultimate cash flows to shareholders in Spark Infrastructure have a degree of financial risk associated with them that are reflected in the degree of 'look through' gearing, it is appropriate to undertake de-levering of beta estimates of Spark Infrastructure only if the 'look through' gearing is estimated.

### ***The AER's approach***

The AER notes that for Spark Infrastructure the application of 'look through' gearing results in higher levels of gearing than the Bloomberg market gearing. For Spark Infrastructure at 30 December 2006, the AER has relied on the Bloomberg reported total debt amount of \$1.655 billion, and the Bloomberg reported market capitalisation of \$1.205 billion, which results in a gearing level of 57.9 percent.<sup>17</sup> The AER concluded that it is not clear whether the Bloomberg approach or the application of ACG's 'look through' gearing analysis best informs the AER about benchmark gearing levels.

### ***ACG's response***

When de-levering betas, it is essential and common regulatory practice to take account of differing layers of debt if they exist, and it is incorrect not to do so.<sup>18</sup> This is because the purpose is to derive an asset beta for the fundamental activity – and so if the activity for which the beta is estimated has multiple layers of debt, then the effect of all layers of debt needs to be removed to obtain the asset beta for the fundamental activity.

The AER's reliance on Bloomberg's market gearing is a concern unless the structures and nature of the securities underlying Bloomberg's reported numbers have been investigated also. In the case of Spark Infrastructure, we found the level of gearing reported by Bloomberg does not incorporate the full effect of debt residing in the downstream operating entities (CHEDHA and ETSA) although care needs to be taken to remove the effect of shareholder loans. It is therefore incorrect to rely on Bloomberg gearing numbers without adjustment.

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<sup>17</sup> AER (11 December 2008), p.73.

<sup>18</sup> The impact of layers of debt in parent and subsidiary companies is taken into consideration by US regulators. See Goodman, Leonard (1998), *The Process of Ratemaking*, Public Utilities Reports Inc. Vienna, Virginia, Vol. 1, p.654.

## 2.4 Loan Notes

### *The issue*

In our report we discussed the issue of loan notes, and provided case studies in appendices dealing with these securities.<sup>19</sup> In the case of Envestra we noted that the Prospectus described the characteristics of the loan notes as being:

- Unsecured subordinated debts of Envestra;
- With a capped interest rate;
- Only payable to the extent that cash is available after satisfying prior obligations to higher ranked debt holders;
- Interest payments are not carried forward; and
- The loan notes cannot be sold separately from the stapled shares in Envestra (they are owned by the same people).

Like Standard and Poor's, we concluded that these characteristics indicate that these loan notes were equivalent to equity, and in any event, their value is included already in the value of the stapled security. As such, in order to calculate gearing, the (book) value of the loan notes balance needs to be removed from the reported (book) debt balance.

### *The AER's approach*

The AER's *Explanatory Statement* considered loan notes in a section on stapled securities, and stated that ACG had obtained the market value of the stapled security and reduced the corresponding book value of debt (or net debt where applicable). The AER concluded:<sup>20</sup>

If the market value of the loan note does not equal the book value of the loan note the AER considers that it may be more appropriate to use the book value of the stapled security. The use of the book value is preferred rather than the market value of the stapled security when adjusting the book value of debt to ensure that the book value of debt is adjusted by a book value rather than adjusting a book value with a market value. That said, the AER notes that the difference between the book and market value of the stapled security is immaterial.

In its analysis, the AER applied the debt values reported by Bloomberg. The AER defined total debt as the sum of long-term borrowings and short-term borrowings. However, the AER did not adjust the (book) value of borrowings downwards to account for the value of loan notes. As a result, the (book) value of total debt reported by Bloomberg, and used by the AER was higher than the (book) value of debt adjusted for the value of loan notes, which was the approach adopted by ACG.

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<sup>19</sup> See Allen Consulting Group (21 September, 2008), *Review of gearing issues raised in AER Issues Paper*, Report to Energy Networks Association, Grid Australia and APIA. A detailed consideration of the characteristics of the loan notes of Envestra and Spark Infrastructure was provided in Appendix A.

<sup>20</sup> AER (11 December 2008), p.71.

## ACG's response

### *Errors in the treatment of Envestra loan notes*

The AER's statement that ACG obtained the market value of the stapled security is not correct. There is no market value for the Envestra loan notes, as they cannot be traded separately from the Envestra shares (i.e. they are part of a stapled security). The small difference between the book value derived from the June 2007 Balance Sheet by the AER (\$98.96 million), and the value that ACG calculated (\$102 million), was due to ACG sourcing the book value of the loan notes from the Envestra website and multiplying their per share value of \$0.12 as at 31 May 2007 by the number of shares on issue at that time. The differential is due to an accounting offset for the outstanding balance of capitalised equity raising transaction costs. We agree with the AER that the most accurate way of determining the book value of the loan notes would be to source the value from the published accounts. Unless the adjustment is made, the gearing level of Envestra would be overstated.

Our report agreed with the approach adopted by Standard and Poor's, which was to remove the book value of loan notes from the book value of debt. We agree with the AER that the best approach for sourcing the book value of the loan notes is to take the value from the balance sheet. The AER's *Explanatory Statement* appears to endorse the practice of removing the book value of loan notes, but the discussion of book and market values of loan notes clouds the issue. In the interests of clarity the AER should make a clear statement that it agrees with the approach adopted by Standard and Poor's, that the book value of loan notes, which have distinct equity characteristics or are part of a stapled security should be removed from the book value of debt in the balance sheet.

### *Errors in the treatment of shareholder loans and market capitalisation of Spark Infrastructure*

The AER has relied on Bloomberg market gearing and obtained a market gearing estimate. However, the Bloomberg total debt figure of \$1,655.5 million for 2006 does not take account of Spark Infrastructure's 49 percent share of CHEDHA and ETSA debts excluding the value of the shareholder loans, plus the debt held directly by Spark Infrastructure, which all amounts to \$2,594 million.

In addition, the Bloomberg market capitalisation figure excludes the value of the 54 cents second instalment that was due to be paid in March 2007.<sup>21</sup> With 1.0087 billion Spark Infrastructure securities on issue this amounts to \$544.7 million in market capitalisation, which is the difference between Bloomberg's reported market capitalisation of \$1,205.3 billion and the \$1.750 billion market capitalisation that we applied in calculating the gearing level of Spark Infrastructure.<sup>22</sup>

<sup>21</sup> The 54 cent instalment payment did not go to Spark Infrastructure. It was effectively an additional payment to CKI for the economic interest that it sold to shareholders in Spark. Hence, the share price was depressed by 54 cents due to the 54 cent liability to pay, which was attached to each share. Hence, the share price understated the market value of the ongoing business by 54 cents per share.

<sup>22</sup> Bloomberg's comparative returns analysis for Spark Infrastructure shows that between February and March 2007, the stock had a n almost 60 percent jump in total return, resulting in significant out-performance of the ASX 200 Index and ASX 200 Utilities Index. This out-performance is fictitious for Spark Infrastructure security holders who contributed 54 cents per security in their second instalment during this month.

Since Bloomberg under-estimated the level of market debt in the underlying operations owned by Spark Infrastructure security holders and also underestimated the market capitalisation, the market gearing level of 57.9 percent at December 2006 reported in the AER's Table 5.2 was close to the gearing of 60 percent reported in Table 4.5 of our paper.<sup>23</sup> However, this was purely a coincidence of two off-setting errors in the Bloomberg numbers. This example highlights the fact that Bloomberg should not be relied on when there are company structures requiring a 'look through' debt analysis.

### *Errors in beta estimates*

The AER's *Explanatory Statement* concludes by saying that the "look through" gearing analysis provided by ACG "provides a cross check on the estimates derived from Bloomberg and Standard and Poor's data"<sup>24</sup>. The AER's use of Bloomberg market gearing measure will be incorrect if there is a need for a 'look through' approach, or there are shareholder loans that are effectively equity. We note that the AER's consultant, Associate Professor Olan Henry has used Bloomberg gearing data without adjustment for 'look through' gearing.<sup>25</sup> Therefore the gearing estimates and re-levered beta estimates that he has obtained for Envestra, Spark Infrastructure and SP AusNet are wrong.

## **2.5 Conclusions**

In this Chapter we have reviewed a number of key issues associated with the estimation of a benchmark gearing level. Our conclusions can be summarised as follows:

- When estimating benchmark gearing, net debt is the most appropriate measure of debt but it is necessary to deduct cash from debt and the equity market value. However, when estimating equity betas the 'net debt' concept should be applied without an adjustment to the equity value.
- The (book) value of loan notes must be subtracted from the book value of debt when estimating the value of debt.
- When estimating gearing for the purpose of de-levering betas it is essential, and common regulatory practice, to take account of differing layers of debt in a vertical ownership structure, and it is incorrect not to do so.
- A 'look through' analysis of gearing must be applied whenever there is a vertical ownership structure, and it is not correct to place weight on the Standard and Poor's estimated book gearing levels, as is proposed by the AER.

As discussed in Chapter 3 below, only a market-based measure of gearing should be applied in estimating gearing levels for the WACC formula, or beta estimation. It is therefore not appropriate for the Standard and Poor's book value approach to be considered as a 'cross check' against 'look through' market gearing levels, as suggested by the AER.

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<sup>23</sup> More accurately, the gearing level we calculated was 59.7 percent.

<sup>24</sup> AER (11 December, 2008), p.74.

<sup>25</sup> Olan Henry (28 November, 2008), *Econometric advice and beta estimation*, Report to the Australian Energy Regulator.

### Chapter 3

## Market vs book value of gearing and comparator selection

### 3.1 The issue

The NER requires that the capital structure weights employed in the WACC calculation be based on market debt and equity values. In our report we based our recommendation that there is no persuasive evidence to move away from a market gearing level of 60 percent on market gearing evidence for listed businesses over a period of years. For completeness we also investigated, and found that Standard and Poor's book gearing measure of total debt to total capital for its full sample of private businesses and GBEs coincidentally provides a similar answer. However, we did not advocate the use of book measures of gearing, or the inclusion of GBEs in the measurement sample.

### 3.2 The AER's approach

The AER's *Explanatory Statement* argued that the book value of debt may divert from the market value when interest rates are volatile. It hypothesised that the market value of equity may also change when interest rates change. From these two observations, it concluded that:<sup>26</sup>

Accordingly, in these circumstances, the AER considers that the book value of gearing may act as a proxy for the market value of debt and equity to obtain a benchmark efficient level of gearing.

### 3.3 ACG's response

In our opinion the AER's logic is not persuasive. It is true that the market value of debt may differ from the book value at times of interest rate movement (that is, as long as the debt is fixed rate and then until it is refinanced). This is why a single point observation (particularly in times of volatile interest rates) should not be relied upon. But as the market value of equity can be observed from the share price of traded securities – there is no justification for using the book value of equity as a proxy for the market value.

The problem with observing gearing levels at times of significant (equity) market movement is that the observed gearing level may not be the target or long term level because it takes time to change debt levels (in either direction). This again says that gearing should be observed over a period rather than at a single point in time – it does not say that the book value of equity should be used. At best, the book value of equity is the board's view of the market value – and hence is one step removed from the actual value in the market place. At worst it is an historical accounting artefact.

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<sup>26</sup> AER, (11 December, 2008), p.74.



The market value concept of gearing is applied by professional valuers in commercial business valuation. For example, the valuation and appraisal group of KPMG in the US has traditionally applied market values:<sup>27</sup>

The WACC is a company's blended cost of equity and debt capital, the weighting is based on the expected capital structure of equity and debt at market – not book – value... When using the WACC, the analyst assumes that the company's capital structure includes debt and that the proportion of debt relative to equity at market value can be determined.

Professor Damodaran has observed that many analysts in the market are tempted to adopt the incorrect procedure of using book gearing as a proxy for market gearing:<sup>28</sup>

Many analysts disavow the use of market value in their calculations, contending that market values, in addition to being difficult to get for debt, are volatile and hence unreliable. These contentions are open to debate. It is true that the market value of debt is difficult to get for firms which do not have publicly traded bonds, *but the market value of equity is not only easy to obtain, it is constantly updated to reflect market-wide and firm-specific changes.* Furthermore, using the book value of debt as a proxy for market value in those cases where bonds are not traded does not significantly shift most market-value based debt ratios. *(Our emphasis)*

Furthermore, Professor Damodaran notes that:<sup>29</sup>

Deviations in the market value of equity from book value are likely to be much larger than deviation for debt.

Hence, the book value of debt is likely to be the best available estimate of the market value of debt, while the best estimate of the market value of equity is the value revealed in market trading. Again, the measurement of gearing over a period of time using book debt and market equity is likely to approximate the market gearing ratio well. The same cannot be said when using a combination of book debt and book equity measures, as book equity is a poor estimate of the market value of equity.

We disagree with the AER's inclusion of GBEs in the sample to estimate market gearing levels of commercial businesses as required under the NER. Aside from possible complaints that government businesses do not have full incentives or freedom to adopt commercial gearing levels, it is not possible to observe the market value of a GBE's equity, and so obtain a reasonable estimate of its market value-based gearing level. They cannot, therefore, form part of a valid sample of comparator businesses to estimate the benchmark level of gearing.

### 3.4 Conclusion

The AER's contention that the "book value of gearing may act as a proxy for the market value of debt and equity to obtain a benchmark efficient level of gearing" is not correct. As well as being contrary to the requirement of the NER to use market values, it is incorrect to apply book values of equity as a proxy for market values, as this could result in a significant distortion of the WACC formula and hence the target revenue that is derived by the AER.

<sup>27</sup> Patrick F. Dolan, (1993), "The Valuation Process and Trends Affecting Valuations", Chapter 29 in Raymond H. Rupert (Ed.) *The New Era of Investment Banking*, Probus Publishing Co (Chicago Ill. and Cambridge England), pp.315-333. Patrick Dolan was Senior Manager, Valuation and Appraisal Group, KPMG Peat Marwick, New York, NY.

<sup>28</sup> Aswath Damodaran (2002), p.51.

<sup>29</sup> Aswath Damodaran (2002), p.51, footnote 10.



While it is true, as the AER argues, that equity values can be volatile, consideration of market gearing values over a period of time will smooth such fluctuations. While it is true that it is difficult to obtain very accurate market values of debt, approximations using the book value of debt are likely to be much closer than in the case of equity. When measured over a period of time a very good approximation of the market debt and equity gearing level can be obtained by using a combination of book debt and equity, as is done by the vast majority of commercial valuation experts.

These conclusions have a further important implication for the composition of sample of comparator firms used to estimate a commercial level of gearing. Since it is not valid to use book equity as a proxy for the market value of equity, GBEs cannot be included in the comparator sample. Furthermore, to include GBEs would be inconsistent with the AER's definition of the 'efficient benchmark firm' as being 'a large listed firm'.<sup>30</sup>

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<sup>30</sup> AER (21 November, 2008), p.190.