

**Essential Services Commission  
Final Decision – Gas Access Arrangement review 2008-12  
Issues in relation to estimation of gamma**

**Stephen Gray  
Strategic Finance Group  
28 March 2008**

**Terms of reference**

In relation to the estimation of gamma, the Victorian Gas Distribution Businesses (Envestra, Multinet and SPAusNet) have requested SFG to review the Commission’s Final Decision and assess the validity and accuracy of the analysis performed and conclusions reached by the Commission and its consultants.

**Context**

In relation to a number of key issues, the Commission has dismissed or not properly applied the analysis in the SFG Reports because of:

- Error;
- Superficial analysis; and
- Misunderstanding the point.

Consequently, the matters raised stand as correct and must be considered properly.

**Summary of findings**

<i>Issue</i>	<i>ESC/ACG position</i>	<i>SFG response to error in ESC/ACG position</i>
Market practice.	The dominant practice of Australian corporations and expert valuation professionals is to make no adjustment to WACC for the assumed value of franking credits.	This issue has not been addressed by the Commission.  This is an important consideration in determining how the market would determine an appropriate required return.
Regulatory practice.	The Commission does make submissions about what is the standard way of estimating gamma when an adjustment is made to WACC for the assumed value of franking credits.	The Commission/ACG provides no evidence of anyone other than Australian regulators making such an adjustment.  If an error or inconsistency in a current practice is discovered and documented, it must be corrected.

<p>Effect of tax changes in July 2000.</p>	<p>To the extent that the Commission considers empirical evidence, it relies on data from the post-2000 period only.</p> <p>The results of ACG study are ignored. After correction of errors by ACG, this study also finds that there was no change in the value of theta that occurred in July 2000.</p>	<p>It is incorrect to restrict the data set in this manner. There is no basis for it. The SFG Report demonstrates that there is no statistically significant difference in empirical estimates of theta from the pre-2000 and post-2000 periods. This is done using the same data sources and methodology as Beggs-Skeels and Hathaway-Officer, on which the Commission relies. The Commission does not reject this.</p> <p>When corrected for errors the analysis is relevant and should be considered.</p>
<p>Provision of data and computer programs.</p>	<p>The Commission/ACG requested the data set and computer programs used in the SFG analysis. This was supplied to the Commission in January 2008. It contains more recent data than any other study.</p>	<p>The Commission provides no reasons for rejecting the SFG data, programs or analysis.</p> <p>The Commission does not refute the SFG conclusions.</p> <p>The Commission continues to rely on the now outdated results of Hathaway-Officer and Beggs-Skeels.</p>
<p>Data set relied upon.</p>	<p>The Commission/ACG relies upon post-2000 data only.</p> <p>The Commission/ACG relies upon a small sub-set of the results presented in the various papers.</p>	<p>It is incorrect to restrict the data set in this manner. There is no evidence of a change in the value of theta. One should use the largest possible data set to provide more statistically precise and robust results.</p> <p>It is incorrect to focus exclusively on a small sub-set of a more complete set of results. There is no basis for focusing on one result selected from each paper and using that single result to support the Commission's position.</p>
<p>Use of market data versus theoretical assumptions.</p>	<p>The Commission/ACG considers empirical evidence based on market data <i>and</i> assumed values of theta that are based on theoretical models and involve no market prices whatsoever.</p>	<p>It is incorrect to use an approach that effectively assumes a value for any WACC parameter without the need for any market data.</p> <p>This is also inconsistent with the way all other WACC parameters are estimated.</p>

<p>Use of weighted-average utilization rate.</p>	<p>The Commission/ACG considers the weighted-average utilization rate to be another basis on which to set theta.</p>	<p>It is incorrect to use this approach to set a value for theta.</p> <p>The weighted-average utilization rate is a by-product of the derivation of an asset-pricing model that is not the CAPM. The DBs and the Commission have used the CAPM to estimate the required return on equity capital. Any use of a component of a model other than CAPM is inappropriate.</p>
<p>Consideration of International CAPM.</p>	<p>The Commission discusses the potential effects of a type of International CAPM.</p>	<p>This is irrelevant.</p> <p>The DBs and the Commission have used the CAPM to estimate the required return on equity capital. Any use of a model other than CAPM is inappropriate.</p>
<p>Definition of market over which weighted-average utilization rate is estimated.</p>	<p>The Commission/ACG cite arguments by Lally suggesting that “the market” be assumed to be a completely segmented Australian market.</p> <p>Elsewhere, the Commission suggests that foreign investors should <i>not</i> be simply assumed away.</p>	<p>It is incorrect to make such an assumption. All other WACC parameter estimates are affected by the trading of foreign investors. This should also apply to theta.</p> <p>This is inconsistent with the Lally view that Australia should be assumed to be perfectly segmented.</p> <p>This view also requires that any weighted-average must be taken over <i>all</i> investors, both foreign and domestic, with the result being an average utilization rate close to zero.</p>

<p>Diversification benefits for foreign investors.</p>	<p>The Commission/ACG suggests that foreign investors may be willing to accept a lower required return than that required by Australian investors due to diversification benefits.</p>	<p>This is incorrect for two reasons.</p> <p>First, such differential required returns for different sub-sets of investors do not occur under the CAPM – the estimated required return is an equilibrium return that clears the market. There is no sub-set of investors who are willing to provide equity capital for a lower return.</p> <p>Second, the Commission provides no evidence of these diversification benefits. The Commission’s argument only holds if the efficient frontier of investable portfolios that is available to a foreign investor who can invest in every country other than Australia is significantly changed when investment in Australia is allowed. That is, there must be some special or unique diversification benefits that come from investing in the Australian market than cannot already be obtained by diversifying into other markets.</p>
<p>Estimates from Lally.</p>	<p>The Commission refers to estimates provided by Lally. These are derived <i>conditional</i> on assumptions about dividends having a lower value than capital gains due to tax differentials. The results of Hathaway-Officer and Beggs-Skeels are adjusted to allow for assumed personal taxation differences between dividends and capital gains.</p>	<p>It is incorrect to consider such an approach.</p> <p>The Lally approach is based on an “after personal tax” asset pricing model and is inconsistent with the CAPM. The DBs and the Commission have used the CAPM to estimate the required return on equity capital. Any use of a model other than CAPM is inappropriate.</p>

<p>Consistency between CAPM and empirical estimates of theta.</p>	<p>The SFG report notes that the empirical estimates relied on by the Commission/ACG are based on dividends having a different value to capital gains, and that this is inconsistent with the use of CAPM, which is based on dividends and capital gains being equally valued.</p> <p>The Commission/ACG rejects this argument on a number of grounds:</p> <p>Use weighted-average utilization rate rather than market prices;</p> <p>Use “adjusted” estimates from Lally;</p> <p>Use models other than CAPM</p>	<p>WACC parameters should be estimated using market data not theoretical assumptions. See above.</p> <p>Even if this approach were to be considered, the Commission has mis-applied it. The average should be taken over all investors (including non-residents) in which case it would be immaterially different from zero. See above.</p> <p>It is incorrect to consider this analysis as it is based on a model other than CAPM. See above.</p> <p>It is incorrect to consider models other than CAPM. See above.</p>
<p>Consistency between estimates of gamma and MRP.</p>	<p>The Commission suggests that the SFG submission on this point is based on two key assumptions, citing work by Lally on this issue.</p>	<p>These are not assumptions by SFG, they are assumptions that underlie the Officer CAPM-WACC framework. They can be relaxed, but this involves an abandonment of the Officer framework in favour of an alternative model.</p> <p>This issue has progressed in the academic literature. A paper by Lally on this issue, and the response by Gray and Hall (invited by the editor of the journal) are attached.</p>

<p>Marginal investor or average investor.</p>	<p>The Commission spends much time discussing the conceptual constructs of a marginal versus an average investor.</p>	<p>This distinction is confused and distracting. In reality, this whole discussion boils down to whether theta is estimated with reference to market data or via theoretical assumption.</p>
<p>Effect on estimate of MRP.</p>	<p>The Commission submits that if its estimate of gamma were to change, its estimate of MRP may also need to be revised.</p>	<p>This is unlikely.</p> <p>The Commission's estimate of gamma may only affect its estimate of MRP from historical data. But the Commission itself has shown that for every historical period that it has examined the estimated MRP is greater than 6% even when gamma is set to zero.</p>