Queensland Government Owned Corporations

Cost of Capital Principles

Queensland Government

Contents

1.0 Purpose

The Cost of Capital Principles (Principles) provides a framework for calculating a cost of capital for Government Owned Corporations (GOCs).

The Queensland Government acknowledges GOCs will have a Board-approved approach for determining the cost of capital for the GOC and for investment proposals where risk profiles of those investments are materially different from those of the GOC as a whole.

When shareholding Ministers review GOC investment proposals, the preference is for a consistent approach for calculating the cost of capital across all GOCs.

Accordingly, when submitting investment proposals for shareholding Ministers' consideration, GOCs are required to submit analysis using a cost of capital based on the Principles. This analysis may be presented in addition to that using the Board-approved cost of capital methodology.

The Principles do not apply to those business areas within GOCs which have their cost of capital regulated by an independent entity (e.g., Queensland Competition Authority). Indeed, the parameters outlined in the Principles may differ from those applied by the QCA in a monopoly prices oversight referral. When determining a cost of capital, monopoly GOCs are to seek a commercial return while not exploiting monopoly powers.

The Principles have been developed with consideration to the operational and financial environment in which GOCs operate, current and common practice by the market, and noting the aim to achieve an outcome consistent with the principles of competitive neutrality.

2.0 Methodology

The weighted average cost of capital (WACC) is a commonly used approach for calculating the cost of capital. This approach has been adopted by GOCs historically and remains the preferred methodology of most regulators. The WACC estimates the expected rate of return on total company assets, and represents a minimum return sought by contributors of capital to the firm.

The WACC estimates a firm's cost of capital by combining the return on debt and equity of a GOC weighted by the amount of debt and equity held by the firm.

After-tax WACC is calculated as follows:

$$\text{Post-tax WACC} = R_d(1-\tau)\frac{D}{V} + R_e\left[\frac{1-\tau}{1-\tau(1-\gamma)}\right]\frac{E}{V} \quad (1)$$

Where:

R_d = cost of debt capital

R_e = cost of equity capital

D = market value of debt capital

E = is the market value of equity capital

V = D + E

γ = the value of imputation credits to a shareholder (in percentage terms)

τ = the company tax rate.

GOCs must use the post-tax WACC as the discount rate applied to nominal income before interest, depreciation, and amortisation, but after tax equivalent payments (i.e., EBITDA(1 – τ)).

3.0 Cost of equity capital

The cost of equity capital, R_e, is the expected rate of return for a shareholder (commensurate with the risk of the investment).

The Principles recommend the cost of equity capital is derived by the Capital Asset Pricing Model (CAPM). The CAPM is a commonly used approach for estimating the expected return on equity. Regulatory agencies such as the Australian Competition and Consumer Commission and the Queensland Competition Authority apply the CAPM.

The CAPM states the firm's cost of equity capital is equal to the risk free rate of return plus a "risk premium" to reflect the riskiness of the investment. As a formula, the CAPM can be expressed as:

$$R_e = R_f + \beta_e(R_m - R_f) \quad (2)$$

Where:

R_f = the risk-free rate

R_m = the market rate of return

β_e = Equity beta measures the sensitivity of the equity investment return to a market portfolio return.

While CAPM calculates an expected rate of return to an investor, it may not at all align with the ex post actual return.

Risk free rate, R_f

The risk free rate is the return an investor could reasonably expect if they invested their money in a riskless investment. Usually, the most appropriate proxy for the risk free rate is the return on long-term government bonds, for example, the 10-year Commonwealth Government Bond rate as the risk free rate.

Market risk premium, $R_m - R_f$

The market risk premium is the rate of return earned on a well-diversified portfolio of risky assets relative to a risk free rate of return. Theoretically, this diversified portfolio should consist of all investible assets (i.e., equity, debt, property, etc.); however, due to data limitations, equity indices such as the ASX200 are generally used.

Long-term historical analysis of equity market returns indicates a range between 6% and 8% is appropriate for the market risk premium. Recent determinations by Australian regulatory bodies have allowed for a market risk premium around 6½% in WACC calculations, after taking into account relevant literature and empirical evidence.[1]

GOCs must use the yield on 10-year Commonwealth Government Bond as a proxy for the risk free rate.

Beta, β_e

Beta measures how the equity return of a security moves relative to other market securities. The more correlated returns are to the broader market, the higher is the equity beta. For publicly-listed entities, the equity beta is usually calculated with reference to its observable share price return and a benchmark index return. For private entities (including GOCs), there is no publicly-observed price indicator. Accordingly, for such entities, the usual approach is to derive an equity beta from comparable publicly-listed entities.

As discussed earlier, the equity beta is influenced by how much equity/debt a firm holds (i.e., its capital structure or leverage). If a firm holds much debt (i.e., it is highly geared/levered), then shareholders will expect a higher return on their investment because, for example, in the event of financial distress/bankruptcy, it is less likely shareholders will be able to maintain their capital investment. In other words, leverage increases risk.

As such, it is not appropriate to use the equity beta of one firm and ascribe it to another firm without adjusting for differences in the capital structure of either firm. It is necessary to remove these differences in financial risk (gearing/leverage) by "de-levering" the equity beta of the comparable firm to obtain the underlying business risk

[1] December 2018, QCA Decision re. *Aurizon Network's 2017 draft access undertaking* [6.5%]; November 2016, QCA Final Decision re. *DBCT Management's 2015 draft access undertaking* [6.5%].

(i.e., removing any financing effects). This beta - with financial risk removed -is called the “asset” beta (βa). Once the business risk of the GOC is identified, an equity beta can be calculated by considering the desired capital structure of the GOC.

To do so, identify a company or group of companies for comparative purposes. Ideally, comparable firms should be listed firms with a financial structure and industry environment similar to that of the GOC. It may be necessary to make comparisons with international companies, although caution should be used as market volatility and performance can vary substantially to Australia.

Next, for each comparable firm, calculate its unlevered (asset) beta. To ‘de-lever’ an equity beta into an asset beta, it is preferred that GOCs use the formula outlined below:

$$\beta_a = \frac{\beta_e}{1 + (1 - \tau)\,{}^{D}/_{E}} \tag{3}$$

Where:

D = the market value of debt of the comparable companies

E = the market value of equity of the comparable companies

τ = the effective tax rate.

To ‘re-lever’ the asset beta to calculate the equity beta for the GOC, the following formula should be used:

$$\beta_e = \beta_a[1 + (1 - \tau)\,{}^{D}/_{E}] \tag{4}$$

Where:

${}^{D}/_{E}$ = the leverage ratio of the GOC consistent with an optimal capital structure.

GOCs must calculate the equity beta for their corporate activities as a whole, and for each of their specific lines of business where each of those businesses have a materially different risk profile.

4.0 Cost of debt capital

The cost of debt is most commonly estimated by applying an appropriate debt margin over the risk-free rate. Often, an average of industry debt risk premiums is used. For GOCs, it is appropriate to refer to margins published by QTC for calculating the competitive neutrality fee as these are based on notional stand-alone credit ratings. These margins will need to be adjusted to ensure they include the difference between the QTC yield curve and the Commonwealth Government 10-year bond rate from time to time.

GOCs must use debt margins published by Queensland Treasury Corporation in calculating WACC.

5.0 Taxation

Looking at equation (1), tax effects are accounted for by τ. In a pre-tax environment ($\tau = 0$), equation (1) reduces to:

$$R_d \frac{D}{V} + R_e \frac{E}{V} \tag{5}$$

In recent regulatory determinations, regulators have chosen to adopt a post-tax approach to calculating WACC (as per equation (1)). Agencies including the Australian Competition and Consumer Commission, the Office of the Regulator General, and the Queensland Competition Authority have adopted the post-tax methodology in pricing determinations.

The majority of GOCs currently undertake project analysis using a post-tax approach. This approach is preferred by Queensland Treasury, subject to GOCs bringing attention to any instances in which an investment is only value adding by virtue of benefits accruing from tax effective structuring.

GOCs must use post-tax WACC.

6.0 Dividend imputation

The Australian tax system provides for dividend imputation to avoid "double taxation" on dividends paid to shareholders. In the absence of dividend imputation, firms pay company tax on profit made, and shareholders pay income tax on dividends paid (based on after-tax company profit). With dividend imputation, shareholders receive a tax credit equivalent to the amount of tax paid at the company level which partly offsets the income tax payable on dividends received.

Accordingly, dividend imputation may affect investor returns and WACC. Looking at equation (1), there are conflicting views on the magnitude of γ, with no real consensus.

Therefore, a value of zero should be used for dividend imputation. When using the WACC formula outlined in these Principles, dividend imputation should not be reflected in the cashflows of the investment proposal evaluation.

GOCs must use $\gamma = 0$.

7.0 Capital structure

It is necessary to assume certain proportions of debt and equity used to finance the corporation's assets. It is generally accepted that the weightings of debt and equity to be used for calculating WACC should be based on an optimal capital structure, rather than the existing capital structure of the entity (see equation (4)).

Each GOC's Board should determine the optimal, most efficient capital structure for its business, having regard to relevant industry comparisons. The resulting capital structure should be provided to Queensland Treasury and relevant shareholding department for review by shareholders.

Further, GOCs may have different target capital structures for different business entities or projects. Where there are different capital structures, these should be used when determining the WACC rates for those different lines of business entities or projects.

GOCs must submit their proposed capital structure underpinning their WACC calculation.

8.0 Real or nominal

While it is possible to calculate WACC in both real and nominal terms, it is often more difficult to use a real WACC due to the differing adjustments that need to be made to nominal cashflows. For these reasons, it is Queensland Treasury's preference that GOCs calculate WACC and undertake investment analyses in nominal terms.

GOCs must present analysis based on nominal, rather than real, cash flows.

9.0 Review

Each GOC should review its WACC on an annual basis. Ideally, separate WACCs should be calculated for those parts of a GOC's operations that face materially different business risk profiles.

In future, GOCs should include details of the calculation of WACC(s) in their Statement of Corporate Intent (SCI). As part of the negotiations regarding the SCI, Queensland Treasury with relevant shareholding departments will review the determination of beta and the optimal capital structure in consultation with GOCs.

Other than the annual review process, in the event a GOC encounters a significant change to the risk profile of its business, it will be appropriate for the WACC to be recalculated in consultation with shareholding departments. Further, where the GOC is assessing a major project, it should calculate an appropriate WACC as part of a project assessment using these Principles.