



New South Wales  
TREASURY

# GUIDELINES FOR FINAICIAL APPRAISAL

Office of Financial Management

## Policy & Guidelines Paper

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## **Preface**

The *Guidelines for Financial Appraisal* is one of a suite of Treasury policy documents aimed at introducing a best practice financial management framework for all Government agencies.

The purpose of the Guidelines for Financial Appraisal is to outline a consistent approach to the financial assessment of potential projects across all public sector organisations.

In preparing the Guidelines, the NSW Treasury commissioned a review of current best practice methods of major Australian corporations in the area of financial appraisals. The Guidelines are consistent with what was considered as best practice resulting from that review.

The Guidelines are designed to be read in conjunction with the NSW Government's *Guidelines for Private Sector Participation in the Provision of Public Infrastructure* and the *NSW Government Guidelines for Economic Appraisal*.

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## Introduction

The *NSW Government Guidelines for Economic Appraisal* were introduced in 1988 so that the benefits and costs of proposed projects of all agencies could be assessed in a consistent manner. Since then there have been a number of developments, particularly in relation to commercial sector agencies and privately financed infrastructure projects, where it is not appropriate for economic appraisal to be the primary method of analysis.

The purpose of the Financial Appraisal Guidelines is to provide assistance in the financial assessment of projects. Financial appraisals are required for the following projects:

- Capital projects of Government Trading Enterprises (GTEs) and State Owned Corporations (SOCs); and
- All projects of Budget sector departments and other Non-Budget sector agencies which involve a financing decision (e.g. outsourcing projects and joint public/private sector infrastructure projects).

In addition, all projects of Budget sector departments and other Non-Budget sector agencies require economic appraisals to be conducted. Similarly, proposed projects of GTEs and SOCs which require an Environmental Impact Statement to be undertaken, are Social Program Projects, or are classified as Projects of State Significance require both financial and economic appraisals to be conducted.

Economic appraisals should be conducted in accordance with the *NSW Government Guidelines for Economic Appraisal*.

***If agencies are unsure which type of analysis should be undertaken in relation to a proposed project, contact should be made with their Agency Relationship Manager in Treasury.***

In preparing the Guidelines, Treasury commissioned a review of current best practice of major Australian corporations in the area of financial appraisal. The Guidelines are consistent with what was considered as best practice by that review.

The Guidelines should be read in conjunction with the NSW Government's *Guidelines for Private Sector Participation in the Provision of Public Infrastructure* and the *NSW Government Guidelines for Economic Appraisal*.

## Relationship of the Guidelines to the Overall GTE/SOC Policy Framework

The NSW Government is committed to a commercial policy framework for GTEs/SOCs which promotes the principles of competitive neutrality between GTEs/SOCs and private sector enterprises of similar risk. The current framework covers: dividends and tax equivalent payments, capital structure, government guarantee fees and financial monitoring. Complete details of these policies are available in the NSW Government publications listed in the References.

An important task for the management of GTEs and SOCs is to ensure that their capital allocation processes achieve the best long term potential for value creation for the shareholders.

In this respect, the Financial Appraisal Guidelines constitute an important part of the overall GTE/SOC Policy Framework.

## **What is a Financial Appraisal ?**

Financial appraisal is a method used to evaluate the viability of a proposed project by assessing the value of net cash flows that result from its implementation.

Projects may involve asset construction, purchase, lease or sale and may be financed in a wide variety of ways - grants, borrowings, revenues, supplier finance or a combination of these.

## **When is a Financial Appraisal Required?**

The future growth and direction of any GTE, SOC or other Government agency is largely determined by how and where capital is invested. As a result, it is generally recommended that financial appraisals be undertaken as part of an agency's overall management practice.

In the case of GTEs and SOCs, financial appraisals will generally be reviewed by Managing Directors and assessed by Boards in determining the allocation of capital. However, in certain specific cases, appraisals may be required to be submitted to Treasury for advice to the Cabinet Standing Committee on the Budget. In addition, Treasury may, as part of its monitoring function, request appraisal reports for specific investment proposals.

Also, the Auditor-General's Office may request financial appraisals as part of its audit function.

*Details of conditions under which financial appraisals are to be made available to Treasury, including the threshold level at which projects require appraisal and other mandatory requirements, will be detailed in Treasury Circulars issued to agencies from time to time.*

## **How Does Financial Appraisal Differ From Economic Appraisal ?**

Financial appraisals differ from economic appraisals in the scope of their investigation, the range of impacts analysed and the methodology used.

A financial appraisal essentially views investment decisions from the perspective of the organisation undertaking the investment. It therefore measures *only* the direct effects on the cashflow of the organisation of an investment decision.

By contrast, an economic appraisal considers *not only* the impact of a project on the organisation sponsoring the project, but also considers the external benefits and costs of the project for other Government agencies, private sector enterprises and individuals - regardless of whether or not such impacts are matched by monetary payments.

Financial Appraisals also differ from Economic Appraisals in that:

- market prices and valuations are used in assessing benefits and costs, instead of measures such as willingness to pay and opportunity cost;
- the discount rate used represents the weighted average cost of debt and equity capital, rather than the estimated social opportunity cost of capital; and
- the discount rate and the cashflows to which it is applied are usually specified on a nominal basis, as the cost of debt and cost of equity are observed only in nominal terms.

## **Steps in Preparing a Financial Appraisal**

The steps to be undertaken in conducting a financial appraisal are as follows:

### ***1 Define the Objectives of the Project***

The overall objective of any commercial project proposed by a GTE or SOC is to increase that agency's net worth, within its defined service delivery role. For the net worth of a commercially oriented agency to increase, investments should only be made where the expected rate of return on the assets over the life of the investment exceeds the agency's cost of capital.

The service delivery objectives of a proposed project need to be clearly thought out and specified, with alternative ways of delivering the same service assessed.

### ***2 Define the Scope of the Project***

Defining the scope of the project correctly is important in the conduct of a financial appraisal.

Projects should not be broken into very small components so as to destroy essential links between elements without which the project would not be complete. Similarly, projects should not be aggregated up to the scale of a program of distinct projects, parts of which could proceed quite independently.

Excessive disaggregation may result in a financial appraisal suggesting that a certain component of a project should proceed, whereas another component, commencing later but integral to the project, is not commercially viable.

Similarly, the risk of assessing overly aggregated projects is that some financially non-viable projects in a program may proceed if other projects in that program have rates of return well in excess of the hurdle rate.

### ***3 Identify Options***

A range of feasible options for the project should be identified early in the appraisal. The options considered should be genuine alternatives, in the sense that they represent the same level of service delivery as that of the proposed project.

The following checklist provides a guide as to the type of cost reducing or revenue enhancing options that should be considered:

- non-build options that meet the same service delivery objective;
- the optimal size of the investment;
- alternative design possibilities or construction techniques available to deliver the project;
- the value of lease options compared to “build/own” options;
- alternative means of delivering the service, including the possibility of private sector involvement as well as the possibilities for contracting out activities currently performed by GTEs/SOCs; and
- the best commencement date of the project, in terms of the assessed impact on cashflows.

#### ***4 Identify and Measure Cashflows***

All *incremental* costs, revenues and risks associated with a project and its best alternatives should be identified and measured, as *nominal cashflows*, in the period in which they occur. Financial impacts which would have occurred, whether the particular project was chosen or not, are excluded.

Cashflows should be estimated on an *after tax basis* over the project’s *economic life*. For long lived assets, whose economic lives extend beyond the period of the financial analysis, the appraisal term can be restricted to 20 years with an estimate of the asset’s residual value included at the end of year 20, to represent the asset’s remaining service potential.

Several approaches have been commonly used in estimating the residual (or terminal) value of assets.<sup>1</sup> However, as limitations exist with each approach, special care needs to be taken to ensure that the method of calculating the residual value of the asset does not bias the viability of the project.

Cashflows associated with alternatives of very different asset lives to the proposed project should be expressed as equivalent 20 year annuities for valid comparison.

##### ***4.1 Effects to be Considered in a Financial Appraisal***

Typical cash inflows which should be considered in a Financial Appraisal include:

- Operating revenues;
- Subsidies from outside parties;
- Operational savings occurring in other areas as a result of the proposed project;
- Sale of surplus assets; and
- Residual values of assets at the end of the appraisal term.

Typical cash outflows which should be considered in a Financial Appraisal include:

- All capital and operating costs (including working capital requirements);
- Taxes (with due allowance for the market value of franking credits);
- Operating lease payments;
- Worker redundancy payments;
- Existing contract termination payments;
- Revenue losses to existing operations affected by the proposed project; and
- The opportunity cost of resources (including land) which would otherwise have been available for sale or lease.

#### 4.2 *Effects to be Excluded in a Financial Appraisal*

Financing costs (interest) should *not* be included in the cashflows, as the opportunity cost of debt is accounted for in the weighted average cost of capital.

Accounting depreciation, economic multiplier effects and sunk costs should also *not* be included. Only the tax effect associated with the depreciation of assets should be considered in a Financial Appraisal. This is explained further in section 4.3.

#### 4.3 *Treatment of taxes*

For projects assessed by GTEs and SOCs, taxes should be calculated as a fixed percentage of operating income (earnings before interest and taxes) to avoid possible distortions to investment decisions that certain tax treatments may cause.

***The tax rate to be applied by agencies will be specified in Circulars issued by Treasury from time to time.*** An adjustment, however, will need to be made to the tax calculated to capture the value of “tax shields”.

Private sector organisations enjoy the advantage of tax shields, which arise due to the tax deductibility of: (i) interest on debt and (ii) depreciation of assets. The former of these tax shields - the *interest tax shield* - in effect minimises the private sector’s cost of debt capital, and thereby their opportunity cost of capital.

To ensure competitive neutrality, in the sense that the public sector is not required to be more efficient than its private sector counterparts, either the *cashflows* of GTEs and SOCs or their *cost of capital* should be adjusted to allow for the tax deductibility of interest on debt and of depreciation on assets, where applicable.

For the purpose of the Guidelines, it is suggested that the tax deductibility for the depreciation of assets be adjusted for in the organisation’s cashflows, whereas the interest tax shield adjustment be made to the organisation’s cost of capital formula.

#### 4.4 *Treatment of imputation*

Under an imputation tax system, shareholders receive credits for the company tax implicitly levied on their dividend receipts. These credits can then be applied to any other tax liabilities of the shareholder.

The effect of dividend imputation needs to be taken into account in a financial appraisal, regardless of whether the shareholder is able to use the imputation credit, as the cost of capital is an *opportunity cost* rather than an actual financing cost. Including the effect of imputation ensures that GTEs and SOCs are not required to be more efficient than private sector enterprises, which enjoy a lower cost of equity to the extent that their shareholders can make use of the value of franking credits.

The tax effect of imputation is generally handled by either adjusting the cost of capital formula, or by adjusting the cashflows. For the purpose of the Guidelines, it is suggested that the adjustment for dividend imputation be made to the cost of capital formula.<sup>2</sup>

***Treasury will provide details in Circulars, issued from time to time, as to the effective proportion of redeemable imputation credits to be assumed by agencies in their financial appraisals.***

#### ***4.5 Treatment of operating and finance leases***

Operating leases should be evaluated as cash outflows in the form of a series of regular payments and compared to an outright purchase alternative, with consideration for the value of options such as renewal or purchase rights, if these features are present.

Financial leases, however, do *not* form part of a financial appraisal as they merely represent an alternative means of financing a project. The viability of the project should be able to be demonstrated irrespective of the way in which it is to be financed.

### ***5 Analyse the Sensitivity Associated with the Cashflows for Each Option***

All assumptions upon which the project is based should be identified and explicitly specified. These include, for regulated GTEs and SOCs, assumptions as to the expected future price path.<sup>3</sup> The critical assumptions which can be varied should then be altered one at a time to test their effect upon the viability of the project and its final outcomes.

The types of variations which should be examined include:

- changes to key variables by  $\pm 20\%$ ; and
- different combinations of key variables which taken together represent an alternative, plausible and consistent view of the future.

Summary financial measures should be calculated and presented for the best and worst cases, and for specific changes to key variables that are deemed highly probable. Break even points for critical assumptions at which the project begins to lose money should also be specified.

The *NSW Government Total Asset Management Manual - Risk Management Guidelines* is a helpful reference to assist analysts in identifying risks associated with projects.

Various categories of risk which should be considered include: Market Risk; Completion Risk (on time, on budget); Operating Risk; Financial Risk; Environmental and/or Political Risk and Private Sector Partner Risks (nature of contractual obligations).

Risk simulation through various computer products may also be conducted, if reliable data exists to estimate the error distributions of key parameter values.<sup>4</sup>

## **6 Select an Appropriate Discount Rate**

### **6.1 The cost of capital**

The appropriate hurdle rate to be used in assessing projects is the *Weighted Average Cost of Capital* (WACC).

The WACC represents the expected rate of return, determined in financial markets, that investors would require in order to supply debt and equity capital for investment in a similar asset. That is, the WACC reflects the returns that could have been earned in the market with this capital, and therefore represents the *opportunity cost* of this capital.

Accordingly, for a firm to maintain its value, it must earn at least its opportunity cost of capital.

Various alternative versions of the weighted average cost of capital formula exist in the finance literature.<sup>5</sup> The appropriate version of the WACC formula to be used depends on the form of the cashflows to be capitalised.

When the cashflows are specified such that the adjustment for the interest tax shield and the tax effect of imputation is made *in* the WACC formula, the *after-tax cashflows* become:

$$\begin{aligned} X &= X_0 - T X_0 && \dots(1a) \\ &= (1 - T)X_0 \end{aligned}$$

where:

- $X^*$  = net cashflows
- $X_0$  = operating income (earnings before interest and tax)
- $T$  = the corporate tax rate

In this case, the appropriate WACC is:

$$r^* = (1 - T) \left[ r_D \frac{D}{V} + r_E \frac{E}{V} \frac{1}{(1 - T^*)} \right] \quad \dots(1b)^6$$

where:

- $r^*$  = the after-tax weighted average cost of capital
- $r_D$  = before company tax cost of debt
- $r_E$  = after company tax required rate of return on equity
- D = market value of debt
- E = market value of equity
- V = (D+E), the value of the organisation's capital base
- T = the corporate tax rate
- $T^*$  =  $(1 - \gamma) T$ ; the imputation adjusted tax rate, where  $\gamma$  is the proportion of company tax claimed as a tax credit against personal income. i.e. the value of the personal tax credit associated with \$1 of that tax

The formulation of the WACC contained in (1b) is proposed by NSW Treasury in favour of an alternative formulation - which adjusts for the interest tax shield and for the tax effect of imputation in the cashflows. The former approach is preferred as it is consistent with best practice in the private sector.<sup>7</sup>

Under the specification of the cashflows in (1a), the tax paid by the organisation is overstated as the interest tax shield is ignored. As a result, a correction needs to be made to the WACC formula for the effect of the interest tax shield. This correction is made through the term  $(1 - T)$  in the WACC formula (1b).

Similarly, in the specification of the cashflows in (1a), no adjustment is made for the effect of imputation credits on the *actual tax paid at the company level*. Under an imputation system, a proportion ( $\gamma$ ) of the tax paid at the company level really represents a withholding of personal tax. Hence, the effect of imputation is to eliminate company tax for those shareholders that can access and use the imputation credits. As a result, a correction is made via the term  $\frac{(1 - T)}{(1 - T^*)}$  in the WACC formula (1b).

## 6.2 Components of the cost of capital

Apart from the tax and imputation terms, there are three basic components in the after-tax WACC formula as stated in equation (1b):

- the cost of debt;
- the cost of equity; and
- the capital structure or leverage (the mix of debt and equity).

### 6.2.1 *The cost of debt*

The appropriate measure of the cost of debt is the opportunity cost of debt. This opportunity cost is usually determined as the *marginal rate* payable on debt of comparable risk and duration to the class of debt which the organisation holds.<sup>8</sup>

For GTEs and SOCs, Treasury proposes that these agencies use a target debt to equity structure in their financial appraisals (see Section 6.2.3.iii). Treasury therefore advises that GTEs and SOCs use the long term bond rate, adjusted by a debt premium, as a proxy for the marginal cost of debt because this rate is independent of the current debt structure of the agency.

The debt premium adjustment, which is to be based on the credit rating of the agency, ensures competitive neutrality between the private and public sectors.

***Treasury will advise agencies in the form of circulars, issued from time to time, as to the applicable long term rate and the debt premium to be used in their financial appraisals.***

For privately financed infrastructure projects, agencies should initially assume the debt cost they believe a private sector proponent will face. As contract negotiations proceed, the debt cost should be revised to reflect the proponents' bid offers.

### 6.2.2 *The Cost of Equity*

The most widely accepted model used to estimate the cost of equity is the Capital Asset Pricing Model (CAPM).

This model relates the expected or *required rate of return on equity* to the market rate of return on a risk free asset plus a premium reflecting the risk of the business.

The expected rate of return on equity derived from the CAPM is defined as follows:

$$r_E = r_F + \beta (r_M - r_F) \quad \dots(2)$$

where:

- $r_E$  = expected or required return on equity
- $r_F$  = risk free rate of return
- $\beta$  = a measure of the sensitivity of an investment's return to the return on the hypothetical market portfolio of shares.
- $r_M$  = expected nominal return on the market portfolio (approximated by the yield on the market portfolio of common equity shares)
- $r_M - r_F$  = represents the market risk premium, or additional return above the risk free rate demanded by investors for holding risky assets.

To make this formula operational, it is necessary to estimate the risk free rate, the market risk premium and the appropriate "beta factor" for the particular investment.

*i. The Risk Free Rate*

The most appropriate measure of the *risk free rate* is the current yield on 10 year Commonwealth Government Bonds.

***Treasury will provide details in Circulars, issued from time to time, as to the appropriate risk free rate to be used by government agencies in their financial appraisals.***

*ii. The Market Risk Premium*

The *market risk premium* for equities is measured as the difference between the gross return on the market portfolio and the return on government stock. The market risk premium for equity in Australia, expressed in post tax terms, has recently been estimated at 6.6%.<sup>9</sup>

***Treasury will provide details in Circulars, issued from time to time, as to the market risk premium to be used by government agencies in their financial appraisals.***

*iii. Beta Factor*

An asset's *beta* is a measure of the sensitivity of the asset's returns to variations in the returns on the market portfolio.

Betas for individual projects, however, are generally non-calculable, as the returns associated with a project are not easily isolated from the returns of the enterprise. Therefore, a proxy for the project beta can be obtained by calculating the beta of an enterprise whose portfolio of projects have similar risk characteristics to the project being proposed.

Where the risk associated with returns from a project is similar to the risk associated with the returns of the organisation's overall portfolio of projects, the organisation's beta should be used as a proxy for the project beta.<sup>10</sup> A detailed discussion as to how the beta of an organisation is typically derived is presented in Section 6.2.2.iv.

However, where an organisation is diversified, the organisational beta is generally not a good indicator of the risk associated with that organisation's projects. In this case, separate divisional betas may need to be determined. These divisional betas are to be calculated based on the beta of a firm whose portfolio of projects have a comparable risk to that of the division. *A necessary requirement, however, is that the weighted average of the divisional betas is equal to the overall beta of the organisation.*

In certain extreme circumstances, a proposed project may be *significantly different* from the other business in which the organisation is engaged. In this case, if the project's risk profile is *materially different* from the risk profile of the organisation as a whole *and* the project is of significant size relative to the organisation's projects, the beta for the project may vary from the beta of the organisation. In this case, the beta factor for a firm whose risk profile is comparable to that of the project, would provide a good approximation of the beta of the project.

If a firm of comparable risk to the proposed project cannot be found, the risk of the project may be handled by sensitivity testing of the assumptions underlying the project’s estimated cashflows. The sensitivity analysis should be conducted over a range of values which captures the variability in the project’s cashflows.

***Agencies wishing to apply project betas which differ from their agency’s beta should consult with Treasury.***

*iv. Calculation of the Beta Factor for a Government Organisation*

For companies which are listed on the Stock Exchange, enterprise betas can be calculated on the basis of market information. However, for unlisted entities - such as GTEs, SOCs and government departments - this is not possible.

To arrive at a measure of the beta factor for a particular government organisation, it is necessary to estimate a beta based on the betas of comparable listed companies, which have a similar return volatility relative to the overall market.

For listed companies, the beta factor can be measured directly by regressing the gross return on the entity’s shares against the gross returns on the market portfolio.

However, the beta factor estimated in such a way reflects two components of risk associated with a company’s returns:

- the asset risk - which is the underlying risk associated with a business; and
- the financial risk - which reflects the risk imposed on shareholders through debt financing operations of the organisation.

As the capital structure of GTEs and SOCs is likely to differ from that of the comparable listed company from which the beta factor is calculated, it is necessary to separate out the asset risk and the financial risk components from the estimated beta factor. The financial risk component is removed by “unlevering” the calculated beta.

The following relationship is used to convert levered to unlevered betas<sup>11</sup>:

$$\beta_U = \frac{\beta_L}{\left[1 + \frac{D}{E}(1 - T^*)\right]} \quad \dots(3)$$

where:

$\beta_U$  = the unlevered (or equity) beta, which represents a 100% equity financed company

$\beta_L$  = the levered (or asset) beta, estimated as the observed beta of an entity with debt (D) and equity (E)

$\frac{D}{E}$  = debt to equity ratio of the comparable listed company

$T^*$  =  $(1 - \gamma)T$ ; the imputation adjusted tax rate

Once the unlevered beta has been calculated, the GTE's target debt to equity ratio (see Section 6.2.3 below) should be used to "relever" the beta.

Although this process of arriving at an unlisted organisation's beta is proposed in the finance literature, it is not without its problems. In establishing beta values for Government agencies, unlevered betas are calculated from levered betas which are often drawn from international data of "like" regulatory environments. However, as levered betas represent the correlation of an organisation's returns with the overall market, these betas are only strictly relevant in the capital market within which they occur.

Hence, it is important that judgement be used when calculating an organisation's beta on the basis of formula (3).

***Accordingly, the beta factor to be used by agencies will be negotiated between Treasury and the relevant agency. For GTEs and SOCs, the beta factor will be specified in the agency's Statement of Financial Performance or Statement of Corporate Intent.***

### 6.2.3 Capital Structure (Debt to Equity Ratio)

For GTEs and SOCs, the appropriate debt to equity ratio to be used, where possible, is the *Target Debt to Equity Ratio* which the organisation expects it will achieve in the future.

The use of the *target debt to equity ratio*, in preference to the *actual debt to equity ratio*, is consistent with the cost of capital theory which requires that a project's viability is independent of the method of financing the project.

The target level best represents the long-term leverage of an organisation and thereby ensures that projects will not be accepted or rejected simply on the basis that, in any year, a slightly higher or lower actual leverage may apply. The use of the long-term target debt to equity ratio also is appropriate for organisations which are proposing projects with long asset lives. Assessing the validity of such projects on the basis of the existing debt to equity ratio may result in inappropriate assessments.

For most GTEs and SOCs, the target ratio to be used will be agreed upon between Treasury and the relevant organisation and specified in the organisation's Statement of Financial Performance or Statement of Corporate Intent. The target should be set at the start of a planning period and only reviewed for appropriateness at the end of that period.

For privately financed infrastructure projects, the debt to equity ratio should initially be assumed by an agency, based on an estimate of the ratio it believes the private sector proponent might reasonably employ. The debt to equity ratio should then be revised, as contract negotiations progress, to reflect the nature of the proponents' bid offers.

In the particular cases where GTEs or SOCs have not had a capital structure study completed, the actual debt to equity ratio - calculated as the ratio of the Market Value of debt to the Market Value of equity - can be used as a "starting value" in estimating the target rate.

### *i. Current Market Value of Debt*

The appropriate measure of the Market Value of debt is the Gross Debt, as Net Debt presumes a use for balance sheet cash which is more an issue of financial policy.

Only in exceptional cases will the Market Value of debt be equivalent to the Face or Book Value of the debt. The Market Value of debt is only equivalent to the Face or Book Value of the debt, if the opportunity cost or interest rate on debt has not altered since the loan was secured.

Where the market rate of interest on debt varies from the rate at which it was secured, the book value of such securities is an unreliable estimate of their opportunity cost. In this case, the Market Value of the debt needs to be estimated by discounting the future cashflows (coupon plus redemption value) of these securities at the current market rate of interest on such debt.

It should be noted that in arriving at the Market Value of the organisation's Total Debt, separate estimates of the Market Value of each class of debt will be required.

### *ii. Value of Equity*

An appropriate measure of the Market Value of equity for an unlisted organisation, is the book equity where book equity is defined as the value of Net Tangible Assets.

However, in the absence of an efficient market by which to establish the value of a GTE's/SOC's assets, a proxy of the market value of these assets needs to be made.

There are several methods that can be used in arriving at the value of a GTE's/SOC's assets. These methods will be outlined in more detail in NSW Treasury's forthcoming paper: *Valuation of Infrastructure Assets for Pricing Purposes*.<sup>12</sup>

## *6.3 Discounting cash flows*

To assess and compare the estimated after-tax cashflows of a project and its options, all cashflow streams should be discounted by the WACC, or the opportunity cost of capital. This discounting simultaneously reduces the values of the cashflows for futurity and riskiness.

## ***7 Calculate Summary Measures of Commercial Merit for Each Option***

The most important measure of the financial viability of the project is the Net Present Value (NPV) of the project's cashflows. The NPV is calculated by discounting the project's cashflows by the organisation's cost of capital.

As long as the proposed project and its alternatives are of a similar financial scale, the highest NPV identifies the best option among those considered. If the alternatives considered are not of a similar financial scale, the best measure of the value of the proposed project is the Net Present Value per \$ of capital invested.

In addition to the NPV, an array of other measures of the project's viability should be examined. These other measures include: the Payback Period (the number of periods before

the discounted sum of returns pays back the initial outlay), Profitability Index (the ratio of returns to costs), Net Present Value per \$ of capital invested and the Internal Rate of Return. Some of these measures, such as the payback period, are extremely useful in determining the feasibility of the project from a cashflow perspective.

## **8 *Independent Review of Appraisal***

The sponsoring agency should undertake a structured, internal but independent review of the project's expected returns. The reviewer should be satisfied with the treatments of:

- outputs and outcomes of the project;
- range and realism of options considered;
- completeness of the list of costs and impacts and their appropriate valuation;
- adequacy of the investigation of the sensitivity of the results to variations in key parameters;
- risks faced by the project as well as the implications of such risks to equity and debt parties;
- the rate at which cashflows have been discounted;
- identification of where the impacts associated with the project fall; and,
- identification of the parties responsible for project implementation and for monitoring the execution of the project and its results.

## **9 *Post Implementation Review***

In addition to reviewing the appraisal, there is value in reviewing the project and its results after implementation.

While a large number of factors (including changes and shifts in demand, technological change, and movements in relative prices and asset values) may influence the achievements of a project's objectives, a review of the estimates underlying the cashflows for the project may assist future projections.

The review should be conducted by someone other than the original appraiser and typically occur about two years after commencement of the operating phase.

## **Private Sector Partnerships in the Provision of Public Infrastructure**

In addition to the general requirements specified in the NSW Government's *Guidelines for Private Sector Partnerships in the Provision of Public Infrastructure*, there are a number of points which must be covered in the financial appraisal of a privately financed infrastructure project.

Only private sector options which reduce public sector costs should remain in the final set of options under consideration. An independent estimate of the after tax return that a private sector partner may be expecting should be made.

The degree to which risks can be shared with, or assumed by, private sector participants must be identified, although the participation of NSW agencies in schemes which evade tax liabilities should never occur.

Details of the likely contractual obligations as they affect: pricing; ongoing risk to the Government; terms of the contract; termination arrangements; and the debt and equity contributions of each party, should be tabulated.

## **Checklist**

The following is a checklist that may help assist the analyst in completing a financial appraisal:

- Have the objectives and scope of the project been adequately defined?
- Have all constraints been identified?
- Have all feasible options been explored?
- Have all cash flows been accurately estimated for the recommended project and the next best alternative?
- Has the sensitivity of the Net Present Value to variations in the values of key parameters been tested?
- Has the distribution of returns to debt and equity parties been assessed?

## **Where Can I Get Help ?**

The principal contact for further advice and assistance in NSW Treasury is the relevant:

Agency Relationship Manager  
NSW Treasury  
Governor Macquarie Tower  
1 Farrer Place  
SYDNEY 2000

Telephone: (02) 9228 4567      Fax: (02) 9228 4041

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## ENDNOTES

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- <sup>1</sup> Marshall Place Associates, *Financial Appraisal Best Practice and Implications for NSW Government Agencies*, 1997, p.16-17.
- <sup>2</sup> Recent studies in Australia suggest the proportion of dividend payments resulting in imputation redemptions to be in the range of 0.50 - 0.70. Based on this information and given that approximately 75% of company profits in Australia are distributed as dividends, the “effective” proportion of dividend imputation credits redeemed, relative to the total taxes paid, is in the range of 0.375 - 0.525 [For details of these studies, the reader is referred to: Hathaway, Neville J and Robert R Officer (1992 and (1996); Browne, Philip and Andrew Clarke (1993) and Bruckner, Kris; Dews Nigel and David White (1994)].
- <sup>3</sup> Agencies should assume a future price path for their business which incorporates an assumption that the Independent Pricing and Regulatory Tribunal will allow for full economic cost recovery through prices of any new proposed capital projects, where these economic costs are deemed to be efficient.
- <sup>4</sup> One of a number of risk simulation products available is listed in the References.
- <sup>5</sup> A detailed discussion of the various versions of the WACC formula and their comparability is presented in Officer (1992).
- <sup>6</sup> Note when  $y = 0$  (ie. in the absence of an imputation tax system or where shareholders are unable to make use of the imputation credits), the formula reduces to the standard WACC formular under a classical tax system. That is, the WACC becomes:  $\left[ r_D \frac{D}{V} (1 - T) + r_E \frac{E}{V} \right]$
- <sup>7</sup> Marshall Place Associates, *Financial Appraisal Best Practice and Implications for NSW Government Agencies*, 1997, p. 26.
- <sup>8</sup> While the actual rate of debt secured by the organisation in the past may be higher or lower than this figure, it is irrelevant as a measure of the opportunity cost of that debt. Differences between the current interest rate and the historical rates set when the debt was first issued simply represent windfall gains or losses to shareholders, but these should not be used to justify undertaking or not undertaking the project.
- <sup>9</sup> Hathaway, Neville J., “Australian Equity Risk Premium” in *Valuation and the Cost of Capital Under an Imputation Tax System*, Cost of Capital Seminar, Melbourne Business School, University of Melbourne, August 1996, p. 22.
- <sup>10</sup> Beta estimates are not exact, so fine distinctions between assets are not possible. Small variations in the perceived risk between projects are, therefore, best treated by analysis of the sensitivity of the cashflows.
- <sup>11</sup> This specification of the relationship between levered and unlevered betas is dependent on, and consistent with, the specification of the cashflows chosen in Section 6.1 of this paper.
- <sup>12</sup> Prior to the availability of this paper, agencies may use their book equity as an estimate for the value of their equity.