

Technical Guide on
**Estimation of
Future Cash Flows and Discount Rates
for the purposes of
AS 28, Impairment of Assets**



Research Committee
THE INSTITUTE OF CHARTERED ACCOUNTANTS OF INDIA
(Set up by an Act of Parliament)
NEW DELHI

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Foreword

In the present fast changing era of business, timely and reliable financial reporting is very crucial for both the enterprise and the stakeholders, as various economic and financial decisions are taken on the basis of this information only. Sometime back, the Council of the Institute of Chartered Accountants of India issued Accounting Standard (AS) 28, 'Impairment of Assets', which has subsequently been notified under Companies (Accounting Standards) Rules, 2006. AS 28 prescribes the principles that an enterprise has to apply to ensure that its assets are carried at no more than their recoverable amount. For determination of the recoverable amount of an asset, measurement of 'value in use' is required under AS 28. AS 28 lays down the principles for the measurement of 'value in use' which in turn requires estimation of cash flows and the appropriate discount rate. It was being felt that there are many related aspects as regards the measurement of 'value in use' in respect of which guidance is required. I am very pleased that the Research Committee of the Institute took upon the task of preparing this **Technical Guide on Estimation of Future Cash Flows and Discount Rates for the purposes of AS 28, Impairment of Assets**.

I wish to place on record my deep appreciation of CA. Harinderjit Singh, Chairman, Research Committee, and other esteemed members of the Research Committee who have made invaluable contribution in the finalisation of this Technical Guide.

I truly believe that this Publication will prove to be a useful guide for all the professionals in discharging their duties effectively.

New Delhi
March 24, 2009

CA. Uttam Prakash Agarwal
President

Preface

As per the requirements of reporting of fixed assets in the financial statements, auditors and the prepares thereof need not only to focus on accounting for fixed assets in accordance with the requirements of Accounting Standard (AS) 10, 'Accounting for Fixed Assets', and Accounting Standard (AS) 26, 'Intangible Assets', but they are also required to assess whether these assets are impaired in accordance with Accounting Standard (AS) 28, 'Impairment of Assets'. Amongst other things, AS 28 also involves determination of 'value in use' of an asset. Hence, correct measurement of 'value in use' is very important for correct recognition and measurement of impairment loss, if any. Certain issues were being raised as to the factors that should be considered to estimate the 'value in use' particularly in the context of future cash flows arising from the asset and to determine the relevant discount rate. Although AS 28 provides some guidance on these aspects, a need was still being felt for some further guidance. Therefore, the Research Committee decided to formulate this **Technical Guide on Estimation of Future Cash Flows and Discount Rates for the purposes of AS 28, Impairment of Assets** to deal with various aspects in the measurement of 'value in use' for the purposes of AS 28. This Technical Guide provides practical implementation guidance in this regard. An effort has been made to simplify the guidance through examples.

On behalf of the Research Committee, I would like to place on record my deep appreciation of CA. Rajan Wadhawan and Shri Dinesh Arora for preparing the basic draft of the Technical Guide.

I believe that this Technical Guide would prove useful to the members of the Institute and others concerned.

New Delhi
March 26, 2009

CA. Harinderjit Singh
Chairman
Research Committee

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TECHNICAL GUIDE ON ESTIMATION OF FUTURE CASH FLOWS AND DISCOUNT RATES FOR THE PURPOSES OF AS 28, IMPAIRMENT OF ASSETS

INTRODUCTION

1. The Institute of Chartered Accountants of India (ICAI) has issued Accounting Standard (AS) 28, 'Impairment of Assets'. The Standard prescribes the procedures that an enterprise has to apply to ensure that its assets are not carried at more than their recoverable amount. Its purpose is to ensure that the carrying amounts of assets are recoverable from the future economic benefits they are expected to generate, and that any losses of future economic benefits are properly recognised in a timely manner. An asset is carried at more than its recoverable amount if its carrying amount exceeds the amount to be recovered through its use or sale.
2. This Technical Guide sets forth the principles for estimating the future cash flows and discount rates to assess the 'value in use' of an asset. Value in use is defined as the present value of the estimated cash flows expected to arise from the continuing use of an asset and from its disposal at the end of its useful life.
3. The terms used in this Technical Guide and defined in Accounting Standard 28 have the same meanings as assigned to them in the Standard, and any reference to 'asset' applies equally to an individual asset or a cash-generating unit (CGU).
4. The guidance provided in the subsequent paragraphs would facilitate the users to develop forecasts of future cash flows and

estimate discount rates. These guidelines are however not exhaustive and the user should use his judgement in applying them.

KEY DEFINITIONS

5. The key definitions forming part of Accounting Standard 28 are reproduced below:

Recoverable amount is the higher of an asset's net selling price and its value in use.

Value in use is the present value of estimated future cash flows expected to arise from the continuing use of an asset and from its disposal at the end of its useful life.

Net selling price is the amount obtainable from the sale of an asset in an arm's length transaction between knowledgeable, willing parties, less the costs of disposal.

Costs of disposal are incremental costs directly attributable to the disposal of an asset, excluding finance costs and income tax expense.

An impairment loss is the amount by which the carrying amount of an asset exceeds its recoverable amount.

Carrying amount is the amount at which an asset is recognised in the balance sheet, after deducting any accumulated depreciation (amortisation) and accumulated impairment losses thereon.

Useful life is either:

- (a) the period of time over which an asset is expected to be used by the enterprise; or***

(b) the number of production or similar units expected to be obtained from the asset by the enterprise.

A cash generating unit is the smallest identifiable group of assets that generates cash inflows from continuing use that are largely independent of the cash inflows from other assets or groups of assets.

PRESENT VALUE

6. Present Value of an asset is computed by discounting the future cash flows, which are expected to be generated from the continuing use of the asset. The objective of using present value in an accounting measurement is to capture, to the extent possible, the economic difference between sets of estimated future cash flows arising at different points in time. To keep it simple, it might be more appropriate to say that the objective is to recognise the time value of money. Without present value, a cash flow due today and the same amount of cash flow due ten years later would appear to have the same worth. Because present value distinguishes between cash flows that might otherwise appear similar, a measurement based on the present value of estimated cash flows provides more relevant information than a measurement based on the undiscounted sum of those cash flows.

Components of a Present Value

7. Present value measurement is the methodology used to reflect in the valuation of an asset factors that are taken into account in all rational economic decisions, viz., the time value of money and the risk associated with the cash flows. The following are key elements for present value measurement:

- Estimation of the future cash flows the entity expects to derive from the asset
- Expectations about the possible variations in the amount or timing of those cash flows

- Discount rates incorporating the time value of money and risk adjustments

8. The value of an asset is the present value of all expected future cash flows that the asset generates.

$$\text{Present value} = x/(1+i)^1 + y/(1+i)^2 + \dots + z/(1+i)^n$$

where

i = rate of discount
x,y,z = cash flows due at the end of 1st, 2nd and nth year respectively

In the above formula, it is implied that the cash flows are expected to be received at the end of each year. However, sometimes it may be more reasonable to project that cash flows are received (or at least available) more or less evenly throughout the year. This projection can be reflected in the discounted economic model by using the “mid-year discounting convention”. This convention projects cash flows being received in the middle rather than at the end of the year, thus more or less approximating the valuation effect of even cash flows throughout the year. The modification to the above given formula to accommodate the mid-year discounting convention results in the following:

$$\text{Present Value} = x/(1+i)^{0.5} + y/(1+i)^{1.5} + \dots + z/(1+i)^{n-0.5}$$

Example

Assuming a discount rate of 10%, present value of cash flows of Rs.100, Rs. 200 and Rs. 300 to be generated during the year 1, 2 and 3 respectively may be computed as below:

$$\begin{aligned} \text{Present Value} &= 100/(1+0.1)^{0.5} + 200/(1+0.1)^{1.5} + 300/(1+0.1)^{2.5} \\ &= 95.4 + 173.4 + 236.4 \\ &= 505 \text{ (approx.)} \end{aligned}$$

FUTURE CASH FLOWS

9. *Composition of cash flows:* Accounting Standard 28 lays down that the estimates of cash flows should include projections of:

- Cash inflows from the continuing use of the asset over its useful life.
- Cash outflows that are necessarily incurred to generate the cash inflows from continuing use of the asset (including cash outflows to prepare the asset for use) and that can be directly attributed, or allocated on a reasonable and consistent basis, to the asset.
- Net cash inflows expected from the disposal of the asset at the end of its useful life.

10. While estimating cash flows, the following should be kept in mind:

- Cash outflows exclude depreciation and amortisation charges, as these are non-cash expenses
- Cash outflows exclude financing charges
- Cash flows are on pre-tax basis, that is, tax charges are excluded from it
- Cash outflows include any allocation of cash flows attributable to central overheads
- Cash flows are estimated for the asset in its current condition. Hence, cash flows should not include effects of future restructuring to which an entity is not yet committed or future capital expenditure to improve or enhance the asset in excess of its originally assessed standard of performance. However, cash outflows include those that are required for the day-to-day servicing of

the asset and those necessary to maintain the asset at its originally assessed standard of performance.

Example

Cash flows arising from the continuing use of the asset may be computed as below:

Earnings before tax (based on income and expenses pertaining to the asset, excluding allocation of central overheads)	XXX
<i>Add:</i> Depreciation/Amortisation	XXX
<i>Add:</i> Interest cost	<u>XXX</u>
Earnings before interest, tax and depreciation & amortisation (EBITDA)	XXX
<i>Less:</i> Allocation of Central overheads	XXX
<i>Less:</i> Cash outflows for day-to-day servicing of the asset (Maintenance expenditure)	<u>XXX</u>
Net Cash Inflow	XXX

11. Internal transfer pricing directly affects the cash inflows and operating cash outflows relating to separate CGUs in, say, vertically integrated groups. For example, consider a situation where one CGU transfers part of its output to another CGU in the same group at a price that is lower than the market price for its output. If an active market exists for the output produced by an asset or cash-generating unit and a part or all of the output is used internally, an entity should use Management's best estimate of future prices that could be achieved in arm's length transactions in estimating

- the future cash inflows to determine the asset's or cash-generating unit's value in use; and
- the future cash outflows to determine the value in use of other assets or cash-generating units affected by the internal transfer pricing.

However, cash flow estimates do not exclude cash flows from synergy with other assets.

PROJECTIONS OF CASH FLOWS

12. Accounting Standard 28 requires that future cash flows should be based on reasonable and supportable assumptions that represent the Management's best estimate of the set of economic conditions that would exist over the useful life of the asset.

13. As mentioned in Accounting Standard 28, cash flow projections should cover the period of useful life of the asset. These are estimated by extrapolating the cash flow projections based on the financial budgets/forecasts using a growth rate for subsequent years. Since detailed, explicit and reliable projections are generally not available for a period longer than five years, it is therefore not expected that variable growth rates formally agreed to by the Management would exceed five years. If, for exceptional reasons, variable growth rates are applied for a longer period, there should be a disclosure in the financial statements of the length of such longer period, the growth rate(s) used and the reason why a steady or declining growth rate is not expected to apply by the end of the five-year period. For example, a recently acquired CGU with products under development may be expected to incur losses for two or three years and be followed by several years of significant growth as new products reach the market – thus cash flow forecasts with explicit growth assumptions may exceed five years.

14. Where a cash-generating unit consists of assets with different useful lives or a single asset consists of components with different useful lives, all of which are essential to the ongoing operation of the unit, cash flow projections should be prepared over the useful life of most significant asset or component from which the cash-generating unit derives its cash flow generating capacity. In order to determine the most significant asset, the following factors may be considered:

- whether other assets of the group would have been acquired without such asset;
- the level of investment that would be required to replace the asset; and
- the remaining useful life of the asset relative to other assets of the group.

In such a case, replacement of assets or components with shorter lives is considered a part of the day-to-day servicing of the asset when estimating the future cash flows. On the other hand, if the primary asset is not the asset of the group with the longest remaining useful life, estimates of future cash flows for the group should assume the sale of the group at the end of the remaining useful life of the primary asset.

Example

In estimating cash flows from a group of assets comprising building, machinery, license and furniture with the remaining useful life of 9 years, 5 years, 15 years and 4 years respectively, license may be identified as the most significant asset from which the group of assets derives its cash flow generating capacity. The enterprise may not have needed to acquire other assets in the group if the license had not been obtained.

In contrast to the above, where an enterprise does not require a license and can acquire other assets of the group without a license, building or machinery may be identified as the most significant asset, because it would require a huge investment to replace it at the end of its useful life.

15. Projected long-term cash flows should follow a steady or declining growth rate. It is likely that different growth rates will be used from year to year in the short-term projections. This rate is steady or declining, unless an increase in the rate matches objective information about patterns over a product or industry

lifecycle. If appropriate, the growth rates may be assumed to be zero or negative. It is also not expected that, in real terms, the steady long-term growth rate used in the cash flow forecast will exceed the long-term, say 20-year, average for the country or countries in which the business of the unit under consideration is to be conducted. This is because it is difficult for any industry to exceed the average over the long term because market forces are likely to operate in a manner making it conducive for competitors to enter the market and restrict growth where conditions are very favourable.

16. *Using higher growth rates in certain cases:*

- (i) Under certain circumstances, companies may enjoy growth rates in excess of the expected overall long-term industry growth rates. Companies normally enjoy higher growth rates than the overall industry rates during the competitive advantage period, i.e., the period during which the company has an advantage over its peers. These advantages may accrue on account of a host of factors such as accessibility of markets, proximity to critical raw material sources, and exclusive supply/demand arrangements. Eventually, when a large number of players in the industry acquire benefits and advantages as are enjoyed by a particular entity, the higher growth rates would tend to diminish and converge with the overall industry norms.

In case of the banking sector, for example, competitive advantage period is the time frame in which a bank is expected to earn an operating return (net operating profit less tax) in excess of its cost of equity, though it is difficult to estimate. The quantitative approach to estimate it could be to view how sustainable the bank's competitive advantage is in the marketplace. The competitive advantage period could be between three to five years, given that banking products are typically easy to duplicate. Free cash flows are then adjusted to mimic the end of the growth duration period. The growth

of operating assets and operating income would revert to a long-term inflation rate beyond the competitive advantage period.

To cite another example, companies operating in the pharmaceuticals sector may enjoy identifiable competitive advantage over their peers and accordingly have growth rates that are higher than the overall industry rates. The companies operating in the pharmaceuticals sector work in competitive conditions, often limited by current patent laws and the ease or difficulty with which new drugs can be patented. Major pharmaceutical companies generally allocate significant resources to R&D activities. The objective for committing huge outlays for research activities is to develop new drugs that can bring in significant returns. This may compensate for underperformance elsewhere in the product portfolio, mitigate effect of manufacturing and other operational inefficiencies and other unproductive research and development activities. Under favourable conditions, of market expenses falling as the market matures, such a pattern can produce strong cash flows. However, the strength of these flows at the end of the competitive period (end of the patent period) depends upon the ability of the company to sustain past sales levels even after the patent expires. This requires developing strong customer loyalty over the patent period, and ensuring that customers do not take to cheaper substitutes after the period is over.

- (ii) Certain sectors like information technology and telecommunications tend to have high growth rates vis-à-vis the 'old economy' counterparts, which could be sustained in the short to medium term. Eventually, in the long term, with the advent of competition, the growth rates would tend to taper off.

17. Historical performance provides an essential perspective for estimating and evaluating forecasts of future performance. An

analysis of the historical performance could include looking for trends and making comparisons with other companies in the same industry for the purpose of analysing industry structure (opportunities for differentiation, entry/exit barriers, etc.) and a qualitative assessment of the asset's strengths and weaknesses. The analysis of the past performance should cover a wide horizon period (typically three to five years). This would help to understand the upswings/downswings, especially in the case of cyclical industries. Such an analysis would also help to ascertain whether the asset and the industry might revert to some normal level of performance over time and whether short-term trends are likely to be permanent breaks from the past. Also, an attempt should be made to ascertain any radical changes in the past performance and identify reasons thereof to determine whether the changes were permanent and whether such changes are likely to be sustained.

18. The cash flow projections for the asset should be consistent with past actual outcomes, except for the effects of subsequent events or circumstances that did not exist in the past. The reasonableness of assumptions for projections may be assessed by examining the causes of differences between past actual cash flows and cash flow projections, if any. For example, if actual cash flows have consistently been below projected cash flows, Management should build in a greater degree of conservatism to the current cash flows, unless they can identify specific reasons for the shortfall and satisfy themselves that those reasons no longer apply.

19. In the case of green-field projects where historical data is not available for the benchmarking purposes, the historical performance of other similar companies in the industry and the overall performance of the industry as a whole should be considered while estimating the forecasts of cash flows. The analysis would include determining industry size, capacity utilisation, revenue and growth trends, and costs and margins, as well as any industry specific issues like the cyclical nature of business, regulatory constraints on production, pricing, etc.

20. There might be situations where the business is based on an innovative concept and is commercially untested. In such a case, comparative data for benchmarking may not be available; so the projections have to be based on the best estimate of the Management. Due consideration needs to be given to its intentions at the start-up, market assessment and other drivers. Project feasibility and market research reports should serve as an ideal starting point for the assessment of demand and for drawing the projections. For example, if a company has launched an innovative solution for vehicle security, the total number of vehicle owners in the relevant geographical region and growth in auto sector could serve as starting points for assessing the market potential in the target segment and for estimating revenues. Similarly, the comparables in other international markets may also provide a sound benchmark for certain start-up ventures.

21. Accounting Standard 28 requires that cash flow projections should be consistent with the most up-to-date budgets and plans that have been formally approved by the Management. Companies generally set performance targets that are higher than the budget statements approved by their Boards. The budget statements accepted at the Board level represent Management's best estimate of future expectations. Accordingly, the approved budget statements should form the basis for assessing future cash flows from the use of the asset. The statements should generally not be older than a year from the date on which assessment of cash flows is made. In case detailed budgets are not available then the forecasts submitted to Banks/Financial Institutions may be used for the purpose.

Example

Entity E owns 90% of its subsidiary L. Entity E's Management has approved the Group's five year business plan, which also includes information regarding entity L. Entity L's Management has prepared its own budget, which are more aggressive than the ones approved by its parent company's Management.

In this situation, entity L should use the business plan approved by entity E for estimation of cash flows. Estimated cash flows should be based on budgets approved by the Management. Although entity L's Management has prepared its own budget, the Group's official estimates are included in entity E's approved business plan.

The parent company's Management may have included in its assumptions information that has not yet been disclosed to entity L's Management. In such a situation, the use of a more aggressive budget by entity L is not appropriate.

22. Projecting revenues is one of the most difficult and important aspects of future projections. While it may not be possible to project "exact" revenues on an absolute basis, an attempt should be made to make reasonable expectations by taking into consideration all the information available at the time of making the projections. While it may not be possible to provide specific forecasting rules, some key factors to be considered while estimating future cash flows are detailed below:

- (i) The first year forecasts may be evaluated to ascertain the existence of a reasonable relationship to the previous year (historical year) or a similar point in the previous business cycle. The first year forecasts should also be supported by the previous quarterly results, year-to-date figures and the orders/contracts in hand.
- (ii) The projected revenue growth rates should be consistent with the historical growth rates and the expected overall industry growth rates. However, if the Management is projecting growth that is over and above the past precedents and in excess of overall industry estimates, the reasons for this should be evaluated. Usefulness of past growth rates for predicting future growth is inversely related to the variability in these growth rates. If there is a significant variability in the past growth rates, then these should be used with caution.

- (iii) The projected growth rates could be based on projected increase in volume or unit price increase or a combination of both. The targeted increase has to be evaluated in the light of existing information and Management estimates of the future demand supply situation. An understanding of the industry dynamics would serve as an indicator of the reasonableness of such estimates. However, it has to be ensured that the target growth rates are achievable within the asset's existing capability (e.g., installed capacity). Further, since the growth rates are stated in percentages, the size of the base revenues on which growth rates are applied is important. It may be easier for Rs. 1 million earnings to generate 50% growth rates than it is for a CGU with Rs. 500 millions in earnings. Since it is difficult to sustain high growth rates as the CGU becomes larger, past growth rates for CGUs that have grown dramatically in size and profits may be difficult to maintain in future.
- (iv) The observed growth rates are the result of fundamental decisions made on the business mix and project choice. If there is any change in them, the historical growth rate may not be a reliable indicator of future growth. Further, changes in government regulations may result in an upward or downward shift in growth rates for all companies in that business, and these have to be factored into future projections.
- (v) It is possible that the Management may project the introduction of new products/product variants in the future by using the existing assets. Accordingly, a thorough analysis would be required to understand the market dynamics of the new products, availability of existing resources for the production process and their likely impact on the existing range of products. Similarly, the impact of the discontinuation of a product range should be factored into the projections.
- (vi) The projected growth rates should also be compared

with forecasts/expectations available for other similar companies, on the basis of available information.

- (vii) Evaluation of future forecasts would involve understanding the Management's strategy for moving forward, future industry demand-supply outlook as well as the asset's competitive advantages and disadvantages. This would help in assessing the overall revenue growth potential. Also, an evaluation of the various performance scenarios for the asset and the relevant industry would need to be carried out.

REVIEW OF MARGINS — HISTORICAL AND FUTURE VIS-À-VIS COMPETITION

23. Past historical margins should be reviewed to understand the past realisations of the product portfolio and associated cost structures. Any change from historical margins should be reviewed to understand the assumptions made by the Management on both (expected) revenue (including expected average realisations) and (expected) cost structures. If the company is expecting efficiency improvements, these should be quantified and factors contributing to them identified. If a decline in prices has been projected while estimating the revenues, the cost of sales as a percentage of revenues may be projected to rise in the future.

24. Cost of sales should conform to general industry norms. It is to be noted that it is difficult for companies in a given industry to dictate their cost of sales. This is particularly so in the case of more commodity-like products, where the pricing is set by the market, and manufacturing costs generally do not fluctuate significantly in view of union contracts, prices of basic materials, etc. Therefore, if an entity shows gross margins that are significantly different from that of its peer group, there may be some weak assumptions in the projections.

EXTERNAL SOURCES OF INFORMATION

25. External evidence, like analyst reports, provides inputs for predicting future growth rates. Analyst forecasts have an advantage over historical data based models used for preparing forecasts because they incorporate more recent information about the enterprise and its future prospects, and take into consideration macro-economic conditions and the overall industry framework. Further, forecasts also made by analysts generally incorporate information revealed by competitors on pricing policy and future growth. However, these estimates should be evaluated cautiously as these are judgements, and may not take into account significant shifts in the fundamental characteristics of an asset, or they depend on data sources which might be erroneous or misleading.

26. A study of the overall macroeconomic indicators also helps in assessing factors that impact future growth. The expected growth rates of all entities are affected by economic news on the GDP growth rate, interest rates and inflation. Projections of future growth should take into account information about the economy and changes in fiscal and monetary policies. If current information, for instance, shows that the economy is growing at a rate faster than that envisaged by the Management, then the Management may be asked to revise the projections on the basis of current prospects. On the other hand, situations like drought and unrest in the economy adversely impact the overall economic growth, leading to lowering growth forecasts for the economy in general and for the enterprise in particular. The information made available by agencies like Center for Monitoring Indian Economy (CMIE), National Council of Applied Economic Research (NCEAR) on the overall economic indicators could be used for developing forecasts.

27. Information revealed by the competitors on future prospects is an important source of external evidence for predicting future performance. Information on the pricing policies and future market expectations should be factored in while assessing forecasts. For example, in an oligopolistic setup like an airline industry, airfare cuts announced by a player generally lead to retaliatory rate cuts by other players. This results in lowering future realisations.

28. An important source of external information is the annual reports published by various players operating in the industry. The Management Discussion and Analysis section contained in these reports provides details on past performance and future outlook. Other secondary sources like industry association reports and primary research reports conducted by independent agencies can also provide valuable information for preparing forecasts.

29. For estimating future cash flows of the assets held by publicly traded companies, substantial information may be available from annual reports of peer companies. However, private companies may not have readily available information, and there may be few or no outside projections for growth rates. So, the estimation has to be based on historical performance, Management's estimates and information available from listed players operating in the industry.

EXCLUSION OF FINANCING AND TAX CASH FLOWS

30. Accounting Standard 28 requires that estimates of future cash flows should not include cash inflows or outflows from financing activities or income tax receipts or payments.

31. Estimates of cash flows should not incorporate any finance related cash flows such as interest expenses or dividends, since the cost of capital is taken into account in the discount rate used for discounting cash flows.

32. Estimates for future cash flows should not include income tax receipts or payments. Since the discount rate is determined on a pre-tax basis, future cash flows are also estimated on a pre-tax basis.

33. To avoid double counting, Accounting Standard 28 clarifies that estimates of future cash flows should not include:

- Cash inflows from assets that generate cash inflows from continuing use that are largely independent of the cash

inflows from the asset under review (e.g., financial assets like receivables)

- Cash outflows that relate to obligations that have already been recognised as liabilities (e.g., payables, pensions or provisions)

ALLOCATION OF CENTRAL OVERHEADS

34. As specified in Accounting Standard 28, estimates of future cash flows should include projections of cash outflows that can be directly attributed, or allocated on a reasonable and consistent basis, to the asset. All the relevant cash flows, including allocation of central overheads, should be taken into account. It is reasonable to assume that cash outflows attributable to an asset should include sensible allocations of corporate overheads, in the same way in which the carrying values of assets should, where practicable, include apportionments of corporate assets.

35. It should be ensured that central overheads are neither completely omitted nor double counted in the value in use calculations. For example, if a part of the carrying value of head office property is allocated to cash-generating units for the purpose of impairment reviews, any internal Management charges considered on cash-generating units should be excluded from their cash outflows, otherwise the carrying value of the cash-generating unit would be increased and its value in use decreased by elements pertaining to the same item.

CASH FLOWS ARISING FROM FUTURE RESTRUCTURING AND FUTURE CAPITAL EXPENDITURE

36. Accounting Standard 28 mentions that the future cash flows of the asset are estimated on the basis of the current condition of the asset. Accordingly, cash flow forecasts do not include:

- Future cash outflows or related cost savings that are

expected to arise from a future restructuring to which the entity is not yet committed to;

- Future capital expenditures that will improve or enhance the asset in excess of its originally assessed standard of performance or the related future benefits from this future expenditure.

37. Where Management has approved restructuring and capital investment plans, the most recent formally approved budgets and forecasts would typically include both the costs and benefits (such as lower production costs or extra revenues from higher quality output) of the planned restructuring and capital expenditure. In such a case, cash flow estimates should consider costs and benefits from the restructuring or capital investment plans (based on the most recent financial budgets/forecasts that have been provided by the Management). However, where no provision for restructuring costs has been made in the balance sheet by the time assets are being reviewed for impairment, forecasts should be adjusted to remove the effect of related costs and benefits.

38. While cash outflows do not include capital expenditure expected to be incurred to improve or enhance the asset in excess of its originally assessed standard of performance, expenditure necessary to maintain or sustain the asset at its originally assessed standard of performance should be included.

Example 1: Treatment of costs that maintain the current standard of performance

The carrying value of a furnace is being reviewed for impairment. It has a useful life of 20 years and requires relining every 5 years. For calculating the furnace's value in use, the net cash flows forecast for the remainder of the furnace's 20 year useful life would include the costs relating to relining the furnace every 5 years, because that expenditure is necessary to maintain the current standard of performance of the furnace.

Example 2: Major overhauls that restore the asset's economic benefits that have been consumed

An aircraft with a useful life of 20 years requires a major overhaul every 3 years. The estimated cash flows of the aircraft would include the cost of each major overhaul (and revenues that assume that the overhauls are carried out and that the aircraft can continue to carry passengers for the whole of its useful economic life).

39. Where carrying amount of the asset does not yet include all cash outflows to be incurred before it is ready for use or sale, estimates of cash outflows include any further cash outflow expected to be incurred before the asset is ready for use or sale. For example, in the case of a building under construction or a development project in progress.

CASH FLOWS FROM DISPOSAL OF THE ASSET

40. Accounting Standard 28 requires that the estimates of net cash flows to be received (or paid) for the disposal of an asset at the end of its useful life should be the amount that an enterprise expects to obtain from the disposal of the asset in an arm's length transaction between knowledgeable willing parties after deducting the estimated costs of disposal. These estimates are determined in a similar way to an asset's net selling price, except that in estimating these net cash flows:

- An enterprise uses the price prevailing on the date of estimate for similar assets that have reached the end of their useful life and have operated under conditions similar to those in which the asset will be used; and
- Those prices are adjusted for the effect of both expected future price increases due to general inflation and specific future price increases (decreases). However, if estimates of future cash flows from the asset's continuing use and

the discount rate exclude the effect of general inflation, this effect is also excluded from the estimate of net cash flows on disposal.

An example describing the factors considered while developing estimates of future cash flows for an enterprise has been provided in Appendix (Example 1).

FOREIGN CURRENCY FUTURE CASH FLOWS

41. It is mentioned in Accounting Standard 28 that future cash flows should be estimated in the currency in which they are generated and then discounted by using a discount rate appropriate for that currency. The growth rates assumed should take into consideration the expected currency devaluation/appreciation, as the case may be. The past data for currency appreciation/depreciation available from international studies, and reports of multilateral agencies like the World Bank, could be used for making these forecasts.

42. Subsequently, the present value obtained in foreign currency is translated into local currency using the exchange rate at the balance sheet date. For instance, if an entity has three cash-generating units, two located in India and one located in the US, the cash flows from the unit in the US will be estimated in USD and discounted using the discount rate appropriate for USD. The present value of cash flows so computed should be converted as prescribed in Accounting Standard (AS) 11, 'The Effects of Changes in Foreign Exchange Rates'.

43. If a cash-generating unit in India has export revenues, these revenues should be converted into INR taking into account the possible appreciation/depreciation of INR vis-à-vis USD. The discount rate used for computing the present value should relate to INR.

Example

Company A has a cash-generating unit based in the US. Cash flows from the continuing use of the unit over its useful life as well as from its disposal at the end of its useful life will be estimated in USD and not in INR. On the other hand, in respect of units based in India, cash flows would be estimated in INR. The discount rate applied to cash flows estimated in USD should reflect the time value of money and risk specific to that asset in the US market. Cash flows estimated in INR would however be discounted using the appropriate discount rate in the Indian market. The discounted value of USD cash flows would then be converted into INR as prescribed in AS 11.

However, in case the unit based in India exports its product to the US, such exports will be converted into INR using the exchange rate and considered in estimating the cash flows in INR.

ESTIMATION OF DISCOUNT RATE

44. Accounting Standard 28 requires that the discount rate should be a pre-tax rate that reflects current market assessments of the time value of money and the risks specific to that asset. The discount rate should not reflect risks for which future cash flow estimates have been adjusted.

45. For example, discount rate of 12 per cent might be applied to contractual cash flows from a loan receivable. That rate reflects expectations about future defaults. However, if cash flows are based on expected rather than contractual cash flows the same 12 per cent rate should not be used, because the cash flows themselves will have been adjusted for default risk in arriving at the expected (as opposed to contractual) cash flows.

46. An enterprise normally uses a single discount rate for the estimate of an asset's value in use. However, separate discount rates for different future periods may be applied where value in use is sensitive to differences in risks for different periods or to the term structure of interest rates.

TIME VALUE OF MONEY

47. In most economies, finance is a scarce resource. Money, therefore, has a value associated with time; Re.1 now is worth more than a promise of Re. 1 in a year's time. This would be true even if there were no risk of non-repayment and inflation. Assets that generate cash flows now are, therefore, worth more than those that will generate the same cash flows later. If the cash flows were not discounted, two assets giving rise to cash flows of the same amount but with different timings would be recorded at the same value, even though their market values and costs if purchased now would be different. This difference in value is automatically recorded in financial statements if the assets are recorded at an arm's length purchase cost or market value because all rational economic transactions will take account of the time value of money. Discounting is, therefore, a useful tool in accounting measurements. However, it is not an end in itself. Simply applying an arbitrary discount rate to a series of cash flows does not provide any useful information to users of financial statements. To determine what discount rate should be used in any particular situation, it is necessary to consider the implications of risk and the accounting objective.

48. The cost of not receiving a cash inflow until some date in the future is an opportunity cost that can be measured by considering the interest that has been lost by not investing that money for the period for which the value in use of the asset is being computed. Similarly, the benefit of not paying cash until some date in the future can be measured by considering the interest that can be earned by investing that money for the period. In both cases, the time value of money unaffected by risk is given by the rate of return on a risk-free investment. The risk-free rates taken are generally the ones available on the long term Government securities like 10 year treasury bonds.

RISK

49. The value of the future cash flows is affected not only by the

time value of money but also by the variability (i.e., risk) associated with them. As with the time value of money, all rational economic transactions will reflect the effect of risk. Again, it follows that differences in value arising from the variability of cash flows are recorded in financial statements as a matter of course, if items are recorded at an arm's length purchase cost and if they are subsequently revalued at market value. It, therefore, seems appropriate that items measured by reference to future cash flows should also reflect the effect of the variability of cash flows.

50. The effect of the variability of cash flows can be reflected in either of the two ways:

- the expected value of cash flows can be adjusted for risk and the adjusted figure (the certainty equivalent) discounted at a risk-free rate, or
- the expected value of cash flows can be discounted at a risk-adjusted rate.

Example

Suppose an asset is expected to give rise to one of the following possible cash inflows in three years' time and that the risk-free rate of return is 5 per cent:

Likelihood of cash flow	Cash flow	Expected value
25 per cent	Rs.100	Rs.25
50 per cent	Rs. 150	Rs. 75
25 per cent	Rs. 200	Rs. 50
Total		Rs. 150

The expected value of the cash inflow in three years' time is Rs.150. However, there is a possibility that the cash flow will not be Rs.150 but Rs.100 or Rs. 200. The reporting entity is risk-averse and would accept a certain promise of, say, Rs.140 in three years' time in return for the asset. We can express the effect of the uncertainty (risk) in calculating the present value by:

- Discounting the certainty equivalent of Rs.140 at the risk-free rate of 5 per cent, giving the present value of Rs.121, or
- Discounting the expected cash flow of Rs.150 at a risk-adjusted rate that will give the present value of Rs.121, i.e., a rate of 7.4 per cent.

In the above example, the value of the asset with variable cash flows is less than the value of an asset with certain cash flows of Rs.150 in three years' time (which is Rs.150 discounted at the risk-free rate of 5 per cent, i.e., Rs.130). The effect of risk on assets will generally be to reduce their value because entities tend to be risk-averse and prefer more certain cash inflows.

RISK ADJUSTMENT

51. Future cash flows are generally used either to calculate value in use or to simulate net selling price. Value in use differs from net selling price in that it is an entity-specific measure determined by the entity's own view of the best use of that asset. Net selling price, on the other hand, is the amount obtainable from the sale of an asset in an arm's length transaction between knowledgeable, willing parties, less the cost of disposal. Value in use, therefore, depends on the entity's assessment of cash flows that can be generated by the asset and net selling price on the market's assessment of the cash flows. When the source of the cash flows that form the basis for the two measures has been determined, the next step is to ascertain the basis for measuring the variability (risk) inherent in the cash flows. Net selling price is a market value and, hence, the risk premium must be the price that the market places on the risk. For value in use, unlike net selling price, the appropriate risk adjustment is not prescribed by any definition. However, in order to sustain the economic rationale supporting the definition of recoverable amount as the higher of value in use and net selling price, value in use does need to reflect some measure of risk.

52. Given that value in use is based on the entity's assessment of the cash flows, it might seem consistent to use the entity's view of the price of the risk, i.e., the risk adjustment that the entity would make in deciding to acquire those future cash flows in a current transaction for cash. However, it is the market price for risk that is relevant to shareholders. The entity can estimate its own cash flows but the value of those cash flows then depends on the market. Value in use should, therefore, also take into account the market's view of risk.

53. As the value in use takes into account the market's assessment of the risks associated with the cash flows expected by the entity, and if the risk adjustment is to be made through the discount rate, the appropriate rate will be the rate of return that the market would expect on an equally risky investment. A rate that reflects current market assessments of the time value of money and the risks specific to the asset is the return that would be required, if one were to choose an investment that would generate cash flows of that amount, timing and risk profile equivalent to those that the enterprise expects to derive from the asset. This rate is estimated from the rate implicit in current market transactions for similar assets or from weighted average cost of capital of a listed enterprise that has a single asset (or a portfolio of assets) similar in terms of service potential and risks to the asset under review.

54. Accounting Standard 28 clarifies that when an asset-specific rate is not directly available from the market, an enterprise may take into account the following rates:

- the enterprise's weighted average cost of capital determined by using techniques like the Capital Asset Pricing Model;
- the enterprise's incremental borrowing rate; and
- other market borrowing rates.

55. As per Accounting Standard 28, these rates are adjusted:

- to reflect the way the market would assess the specific risks associated with the projected cash flows; and
- to exclude the risks that are not relevant to the projected cash flows or for which cash flow estimates have been adjusted.

Consideration is given to risks such as country risk, currency risk, price risk and cash flow risk.

56. The discount rate is independent of the enterprise's capital structure and the manner in which it financed the purchase of the asset. This is because the future cash flows expected to arise from use of the asset do not depend on the way in which the enterprise has financed the purchase of the asset. The discount rate would not change as returns to the investors (whether debt or equity providers) would remain the same, no matter how the specific asset is financed. The rate of expected or required return on equity increases as the level of debt moves up. As the enterprise's financial leverage moves up, the returns to equity holders become more volatile or riskier. This is because a greater fixed proportion of the future cash flows of the financed assets would be pledged to the debt holders. On the other hand, as the enterprise borrows more, its incremental borrowing rate would initially move up. The debt itself assumes some of the business risk of the firm and holders of debt require higher interest payments to compensate for the assumption of business risk. A company may also raise funds from alternative sources such as public deposits, corporate bonds, commercial paper, private placement of debt for financing the purchase of the assets. The rates at which the enterprise is able to raise money from these sources may indicate the market assessment of the risk of the assets that are being financed.

Example: Discount rate used for assets with different risks

A group's businesses include a water utility and a biotechnology subsidiary. The water utility has a lower risk profile than the biotechnology subsidiary. The biotechnology subsidiary was financed entirely by debt at formation, while the water utility was financed internally.

The divisions are separate CGUs. The discount rate used to test the biotechnology assets for impairment should be greater than the rate used for the water utility. The rate is not driven by the actual cost of capital for the CGU, but a risk-adjusted rate, specific to the assets being tested for impairment.

WEIGHTED AVERAGE COST OF CAPITAL (WACC) – CAPITAL ASSET PRICING MODEL

57. Capital Asset Pricing Model (CAPM) measures risk in terms of non-diversifiable variance and related expected returns to this risk measure. The non-diversifiable risk for any asset can be measured by the covariance of its returns with return on the market index, which is defined as asset's beta.

58. The CAPM gives an estimate of an equity investor's required rate of return for a given risk level associated with an investment. The model estimates an equity investor's expected return by the following equation:

$$R_e = R_f + \beta_i \times E(R_p)$$

where,

$$\begin{aligned} R_e &= \text{Expected rate of return for equity investor} \\ R_f &= \text{Risk-free rate of return} \\ \beta_i &= \text{Beta or systematic risk} \\ E(R_p) &= \text{Market Risk Premium} \end{aligned}$$

$$\begin{aligned}
&= \text{Expected return on market portfolio} - \text{Risk-free rate of return} \\
&= E(R_m) - R_f
\end{aligned}$$

The risk-free return is the rate of return on an asset with no default risk. The prevailing return on long term government securities/sovereign debt may be used as a benchmark for this purpose.

Market Risk Premium is the expected return on a diversified market-weighted portfolio of common stocks, less the expected return on a long term risk free bond. While measuring the market risk premium, we do not try to make forecasts of the stock market or predict the future. Instead we try to measure, as objectively as is possible, the expectation of an average investor.

59. The WACC can be computed thus:

$$\text{WACC} = R_d * (d\%) + R_e * (e\%)$$

where:

- WACC = Weighted Average Cost of Capital
- R_d = Pre-tax rate of return on debt capital
- d% = Percentage of debt capital to the sum of the debt and common equity capital ("total invested capital")
- R_e = Rate of return on common equity capital
- e% = Percentage of common equity capital to the total invested capital

60. Beta is a measure of systematic risk. Systematic risk measures the extent to which a company's stock returns move in relation to the overall market. According to CAPM, the greater a security's beta (or systematic risk), the greater is its required return. An implication of the model is that firms with higher volatility of returns (as measured by standard deviation) will have higher required returns due to greater perceived risk, other things being the same. On the other hand, firms whose stock returns are not closely

related to overall market movements (as measured by the correlation coefficient) will have lower required returns. This is because the unsystematic portion of risk gets reduced when an investor diversifies into many securities. Hence, a highly volatile stock may nevertheless have a low beta if its correlation with the market is low.

61. Since beta measures the risk relative to a market index, the more sensitive a business is to the market conditions, the higher is the beta. A beta of 1.5 indicates that a company's stock return tends to rise or fall 1.5% with a 1% rise or fall in the return of the underlying index.

62. The estimates of beta are published by stock exchanges, research reports prepared by banks/brokerage houses, etc. and may also be computed on the basis of observed stock prices and market indices over a period of time.

63. A fundamental assumption of the CAPM model is that the risk premium of the expected return of a security is a function of that security's systematic risk. This is because capital market theory assumes that investors hold or have the ability to hold common stocks in large, well diversified portfolios. So the unsystematic risk attaching to a particular company's stock is eliminated because of the portfolio's diversification. Therefore, the only risk pertinent to the study of capital asset pricing theory is a systematic risk.

Example

Assume the following information:

Risk-free rate – 8%

Expected market return – 15%

Beta – 0.8

Cost of debt – 10%

Debt-Equity (D/E) ratio – 1.5

Cost of Equity may be computed as below:

$$Re = 8\% + 0.8 \times (15\% - 8\%) = 8\% + 0.8 \times 7\% = 13.6\%$$

WACC (pre-tax) may be computed as below:

$$\text{WACC} = 10\% \times (1.5/2.5) + 13.6\% \times (1/2.5) = 11.44\%$$

64. It is important to note that the tax advantage associated with debt financing lowers the effective cost of debt (interest is tax deductible expense) and accordingly the weighted average cost of capital based on the effective cost of debt will also be lower. However, while assessing the impairment of assets, the cash flows are computed on a pre-tax basis and the impact of taxation on discount rates is not taken into consideration.

65. The pre-tax rate discount rate should be used for discounting the pre-tax cash flows. Where the discount rate is derived from an entity's Weighted Average Cost of Capital, which many companies would look to when estimating the appropriate discount rate, the only observable rate of return is a post-tax rate. It should be adjusted to a pre-tax basis. Calculating the pre-tax rate from a post-tax rate is not simply a matter of grossing up the required post-tax rate of return at the standard rate of tax and discounting the pre-tax cash flows at that grossed up rate but other factors need consideration as indicated below.

66. The relationship between post-tax rate and derived pre-tax rate will deviate from the standard rate with the introduction of real factors. These are multi-period cash flows, timing differences, i.e., deferred tax implications due to impairment charge, if any.

67. In theory, discounting post-tax cash flows at a post-tax discount rate should lead to the same result as discounting pre-tax cash flows with a pre-tax discount rate. However, in practice, the following two-step approach may be applied to derive iteratively the implicit pre-tax rate from post-tax rate:

Step 1: The expected actual tax cash payments are calculated to determine post-tax cash flows from pre-tax cash flow projections. These post-tax cash flows are discounted at an appropriate post-tax rate derived by using information observable on the capital markets.

Step 2: The pre-tax discount rate is derived by determining the rate required to be applied to the pre-tax cash flows to arrive at the result obtained in Step 1. In practice, the rate is calculated by using the same methodology as is used for the calculation of an internal rate of return.

INFLATION

68. Inflation affects different types of cash flows differently: cash flows that are fixed in monetary amounts remain constant in money (nominal) terms but fall in real terms; cash flows that are estimates of amounts of purchasing power tend to increase in nominal terms. In both cases, the aim is to arrive at a discounted amount expressed in prices at the time of its measurement.

69. This aim is achieved for cash flows that are fixed in monetary amounts by discounting at a rate that anticipates the effect of inflation (a nominal rate). It can be achieved for cash flows that are not expressed in fixed monetary terms by estimating the cash flows after making allowance for expected price increase (nominal cash flows), in which case the discount rate should also be estimated by including an element for inflation (a nominal rate). Alternatively, where an estimate of future inflation cannot be made with sufficient confidence, cash flows reflecting no inflation should be discounted at a discount rate that does not include a factor for inflation (a 'real' rate). The decision whether to include or exclude inflation should be based on whether the nominal cash flows and nominal discount rate can be measured more reliably than the 'real' cash flows and 'real' discount rate. It may be noted that while estimating future cash flows in real terms, the effect of general inflation is excluded, but specific price changes are taken into consideration.

GENERAL PRINCIPLES

70. The practical techniques used to estimate future cash flows and discount rates will vary from one situation to another, depending on the circumstances surrounding the asset in question. However,

certain general principles govern any application of present value techniques:

- All elements relevant to measurement base being determined should be included

For estimating future cash flows, one of the questions to be answered is whether it should reflect the effect of expected future events or not. For example, there may be a risk of default related to an asset (e.g., realisation of sales proceeds). Although the default may occur in the future, the expectation of the default affects the value of the asset now and should be reflected either in the cash flows or in the discount rate, i.e., impact of such default should either be taken into by reducing the cash flows or increasing the discount rates.

- The impact of a factor should not be considered twice

Estimated cash flows should reflect assumptions that are consistent with the interest rate chosen to discount the cash flows. If this does not happen, the effect of some assumptions will either be double-counted or ignored. For example, an interest rate that the market applies to contractual cash flows will reflect expectations about future defaults. Such a rate should not be used for discounting cash flows that themselves have been adjusted for the risk of future defaults.

- Measurements should not be biased to achieve predetermined results

Estimated cash flows and interest rates should be free from bias or assumptions designed to alter the measurement of value in use to achieve a predetermined result. Similarly, the choice of assumptions should not include factors unrelated to the asset in question. For example, deliberately understating estimated net cash

flows to enhance the future profitability of an asset introduces an element of bias.

- Calculate expected value through probability distribution where relevant

It is often possible to project a number of cash flow scenarios, especially if cash flows are uncertain in timing and amount. In some situations, a range of amounts might include the most likely estimate and other estimates that, while less likely, might still occur. In other cases, the amount of future cash flows might be estimated with relative precision, but with a range of estimates for the timing of those cash flows. In both these cases, the cash flow estimate for each period should reflect the expected value, i.e., the values of different scenarios weighed by their respective probabilities. Example 2 in the Appendix illustrates the use of the probability distribution.

APPENDIX

Example 1

The following example illustrates assessing the Cash Flow projections and computing the Present Value for XYZ Company:

Revenues

XYZ Company has a chain of consumer retail stores spread across major cities in the country. XYZ Company's revenues for the year ending March 31, 2002 were Rs.111 millions. The revenues have been sliding down from the past levels. The revenues for the past two years were Rs. 140 millions and Rs. 165 millions respectively. This reduction is due to the closure or sale of a number of its stores, reduction in store sales in most locations, and overall price reduction on key merchandise.

The latest budget statements of the Company, which have been approved by the Board of Directors, indicate that sales for the year ending March 31, 2003 are expected to decline further to approximately Rs.105 millions, primarily because of additional store closings early in the year.

In FY2004, however, sales are anticipated to increase by approximately 10% to Rs.115.5 millions. The Management believes this increase will result from an approximate 7.0% gain in same store sales and price increases of 3.0%. Market indications to date suggest that the Company's Mumbai stores (approximately 30% of the total) are beginning to show store sales growth over the earlier years and ability to raise prices. Management expects the Company's Calcutta location to lag somewhat. However, they believe that a rebound should take place in FY2004. Thereafter, Management believes that the Company should be able to realise revenue growth of approximately 5.0% per year over the forecast period based upon inflationary price increases and minimal same store growth. The forecasts are predicated upon a constant number of stores.

Cost of Sales

The Management indicates that the cost of sales has been approximately 35.8% for FY2002. The Management's forecast assumes a decline in the cost of sales in FY2003 and FY2004 to 32.1% primarily as a result of anticipated sales price increases. Cost of sales in FY2005 and FY2006 are forecasted to rise slightly to 32.6% as the local economies in XYZ's service regions fully recover, and pricing becomes more competitive.

Selling, General and Administrative Expenses

Selling, general and administrative expenses (SG&A) are approximately Rs. 55.06 millions or 49.6% of revenue in FY2002. This level is slightly higher than what it was in FY2001. The Management indicates that as a result of store closings and internal restructuring, SG&A expenses, headcount and other overhead costs will be reduced below optimal levels. In FY2002, several Management positions were refilled, other programmes such as credit control bolstered, and temporary personnel and outside services utilised. The Management's budgets indicate that SG&A expenses should decline in absolute terms to approximately Rs. 53.76 millions in FY2003 before beginning to increase slightly in absolute terms to approximately Rs. 54.86 millions in FY2004, Rs. 56.63 millions in FY2005, and Rs. 57.81 millions in FY2006. This would translate into SG&A expenses constituting 51.2% in FY2003, 47.5% in FY2004, 46.7% in FY2005 and 45.4% after that.

Further, the Management believes that Central Overheads can be reasonably allocated amongst various stores on the basis of revenue. The Central Overheads are projected at 2% of revenues.

Summary of the Forecast: Assumptions and Projected Financials

A summary of the key forecast parameters is as follows:

	Year Ending March 31				
	2002	2003	2004	2005	2006
Revenue Growth	N/A	(6.1%)	10.0%	5.0%	5.0%
Cost of Sales	35.8%	32.1%	32.1%	32.6%	32.6%
SG&A (% of Sales)	49.6%	51.2%	47.5%	46.7%	45.4%
Central Overheads - allocated (% of Sales)	2.0%	2.0%	2.0%	2.0%	2.0%

Projected Financials

(In Rs. Millions)

	Year Ending March 31				
	2002	2003	2004	2005	2006
Revenue	111.00	105.00	115.50	121.28	127.34
Less: Cost of Sales	39.74	33.71	37.08	39.54	41.51
Less: SG&A	55.06	53.76	54.86	56.63	57.81
Operating EBIT	16.20	17.53	23.56	25.11	28.02
Add: Depreciation	2.00	2.00	2.00	2.00	2.00
Operating EBITDA	18.20	19.53	25.56	27.11	30.02
Less: Allocation of Central Overheads	2.22	2.10	2.31	2.43	2.55
Cash flow from operations	15.98	17.43	23.25	24.68	27.47

Computation of Discount Rate

Risk-free rate of return = 8%
 Expected market return = 15%
 Beta = 0.75
 Cost of debt = 10%
 D/E ratio = 1:2

$$\text{Cost of Equity} = 8\% + 0.75 \times (15\% - 8\%) = 13.3\%$$

$$\text{WACC (pre-tax)} = 10\% \times (1/3) + 13.3\% \times (2/3) = 12.2\%$$

Computation of Present Value

	2003	2004	2005	2006
Cash flow from operations (Rs. millions)	17.43	23.25	24.68	27.47
Period of discounting (Mid- year discounting)	0.50	1.50	2.50	3.50
Discount factor @ 12.2%	0.94	0.84	0.75	0.67
Present Value of Cash flows (Rs. millions)	16.46	19.57	18.53	18.38

Total Present Value of Cash flows = 16.46 + 19.57 + 18.53 + 18.38 =
Rs. 72.94 millions.

Example 2: Probability Weighted Distribution for Estimation of Future Cash Flows

The following table shows the yearly range and probability of possible cash flows expected from the use and eventual disposition of the facility (cash-generating unit) over its useful life of 10 years. It also shows the yearly computation of expected cash flows.

It should be noted that it is the responsibility of the Management to assess the probability of various estimates.

Year	Total Cash Flow Estimate (Rs. Millions)	Probability Assessment	Expected Cash Flows
1	4.6 6.3 7.5	20% 50% 30%	0.9 3.2 2.3 6.4
2	4.6 6.3 7.5	20% 50% 30%	0.9 3.2 2.3 6.4
3	4.3 5.8 6.7	20% 50% 30%	0.9 2.9 2.0 5.8
4	4.3 5.8 6.7	20% 50% 30%	0.9 2.9 2.0 5.8
5	4.0 5.4 6.4	20% 50% 30%	0.8 2.7 1.9 5.4
6	4.0 5.4 6.4	20% 50% 30%	0.8 2.7 1.9 5.4
7	3.9 5.1 5.6	20% 50% 30%	0.8 2.6 1.7 5.1
8	3.9 5.1 5.6	20% 50% 30%	0.8 2.6 1.7 5.1
9	3.9 5.0 5.5	20% 50% 30%	0.8 2.6 1.7 5.1
10	4.9 6.0 6.5	20% 50% 30%	1.0 3.0 2.0 6.0

The following table shows the computation of the present value of the expected cash flows; that is, the sum of the present values of the expected cash flows by year, which are calculated by discounting those cash flows at a risk free rate. It is clear that the expected present value is Rs. 40.3 millions.

Year	Expected Cash Flows	Risk-Free rate of Interest	Present Value
1	6.40	6.0%	6.04
2	6.40	6.1%	5.69
3	5.80	6.2%	4.84
4	5.80	6.4%	4.53
5	5.40	6.6%	3.92
6	5.40	6.8%	3.64
7	5.10	7.0%	3.18
8	5.10	7.2%	2.92
9	5.00	7.4%	2.63
10	6.00	7.6%	2.88
			40.3