

- **Profits vs. Cash Flows** Cash flows are different from profits. Profit is not necessarily a cash flow; it is the difference between revenue earned and expenses incurred rather than cash received and cash paid. Also, in the calculation of profits, an arbitrary distinction between revenue expenditure and capital expenditure is made.
- **Incremental Cash Flows** Cash flows should be estimated on incremental basis. Incremental cash flows are found out by comparing alternative investment projects. The comparison may simply be between cash flows with and without the investment proposal under consideration when real alternatives do not exist. The term incremental cash flows should be interpreted carefully. The concept should be extended to include the opportunity cost of the existing facilities used by the proposal. Sunk costs and allocated overheads are irrelevant in computing cash flows. Similarly, a new project may cannibalise sales of the existing products. The project's cash flows should be adjusted for the reduction in cash flows on account of the cannibalisation.
- **Components of Cash Flows** Three components of cash flows can be identified: (1) initial investment, (2) annual cash flows, and (3) terminal cash flows.

- **Initial Investment** Initial investment will comprise the original cost (including freight and installation charges) of the project, plus any increase in working capital. In the case of replacement decision, the after-tax salvage value of the old asset should also be adjusted to compute the initial investment.
- **Net Cash Flow** Annual net cash flow is the difference between cash inflows and cash outflows including taxes. Tax computations are based on accounting profits. Care should be taken in properly adjusting depreciation while computing net cash flows.
- **Change in Net Cash Flow from Operations** Depreciation is a non-cash item, but it affects cash flows through tax shield. The following formula can be used to calculate change in net cash flows from operations:

$$\Delta NCF = \Delta EBIT(1 - T) + \Delta DEP$$

- **Free Cash Flows** In practice, changes in working capital items—debtors (receivable), creditors (payable) and stock (inventory)—affect cash flows. Also, the firm may be required to incur capital expenditure during the operation of the

investment project. Therefore, the following formula should be used to compute the investment's net cash flows or free cash flows:

$$FCF = \Delta NCF = \Delta EBIT(1 - T) + \Delta DEP - \Delta NWC - \Delta CAPEX$$

- **Free Cash Flows and the Discount Rate** Free cash flows are available to service both the shareholders and the debt holders. Therefore, debt flows (interest charges and repayment of principal) are not considered in the computation of free cash flows. The financing effect is captured by the firm's weighted cost of debt and equity, which is used to discount the project's cash flows. This approach is based on two assumptions: (1) the project's risk is the same as the firm's risk, and (2) the firm's debt ratio is constant and the project's debt capacity is the same as the firm's.
- **Terminal Cash Flows** are those, which occur in the project's last year in addition to annual cash flows. They would consist of the after-tax salvage value of the project and working capital released (if any). In case of replacement decision, the foregone salvage value of old asset should also be taken into account.

- **Terminal Value of a New Product** may depend on the cash flows, which could be generated much beyond the assumed analysis or horizon period. The firm may make a reasonable assumption regarding the cash flow growth rate after the horizon period and use the following formula for calculating terminal value:

$$TV_n = \frac{NCF_n(1+g)}{k-g}$$

- **Inflation and NPV** The NPV rule gives correct answer to choose an investment under inflation if it is treated consistently in cash flows and discount rate. The discount rate is a market-determined rate and therefore, includes the expected inflation rate. It is thus generally stated in nominal terms. The cash flows should also be stated in nominal terms to obtain an unbiased NPV. Alternatively, the real cash flows can be discounted at the real discount rate to calculate unbiased NPV. The following equation gives the relationship between nominal and real cost of capital:

$$\text{Nominal discount rate} = (1 + \text{real discount rate})(1 + \text{inflation rate}) - 1$$

$$\text{Real discount rate} = \frac{1 + \text{nominal discount rate}}{1 + \text{inflation rate}} - 1$$