14

CAPITAL BUDGETING TECHNIQUES

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DISCOUNTED CASH FLOW TECHNIQUE

The discounted cash flow technique (also called **capital budgeting** or **time value of money**) is a procedure to evaluate, compare, and select projects. Any firm has limited borrowing resources that can be allocated among the best investment alternatives. The management should therefore carefully decide whether a particular project is economically acceptable. In essence, evaluating the size, timing, and risk of future cash flows is the basis of discounted cash flow technique.

Discounted cash flow techniques take the time value of money into account by restating each future cash flow in terms of its equivalent value today. The "time value of money concept" is based on the assumption that money today is worth more than money tomorrow. Several possible reasons underlie this assumption:

- *Liquidity preference:* Investors have a preference for having cash/liquidity today because the cash received can either be spent or reinvested to earn more in future.
- *Risk:* Cash received now is safe, whereas future cash receipts may be uncertain.
- *Inflation:* Cash received today can be spent/invested at today's prices but the value of future cash flows may be reduced by inflation.

CLASSIFICATION OF INVESTMENT PROJECTS

Investment projects can be classified into three types: independent projects, mutually exclusive projects, and contingent projects.

Independent projects: If two projects are independent, their cash flows are unrelated. Therefore, accepting or rejecting one project has no bearing on the decision of the other.

Mutually exclusive projects: If two projects are mutually exclusive, they cannot be performed at the same time. Therefore, accepting one automatically precludes the other.

Contingent projects: If two projects are contingent; the acceptance of one is dependent on another.

The discounted cash flow techniques are

A. Payback period (PB)
B. Net present value (NPV)
C. Internal rate of return (IRR)
D. Modified internal rate of return (MIRR)
E. Profitability index (PI)

PAYBACK PERIOD

Payback period is the expected number of years needed to recover a project's cost. It can be calculated using either raw cash flows (regular payback) or discounted cash flows (discounted payback). The payback period measures a project's liquidity, and hence many organizations use it as a measure of risk.

$$\text{PB} = \text{Years before cost recovery} + \frac{\text{Remaining cost to recover}}{\text{Cash flow during the year}}$$

Merits: It is easy to calculate and understand; it serves as a measure of risk.
Demerits: It ignores the time value of money; it does not capture a project's entire cash flows; it is biased against long-term projects and suffers from arbitrary cutoff points.

☑ EXAMPLE 14.1

An investment of $10,000 in Freetown FC would generate a series of cash flows of $3,000 in year 1, $3,500 in year 2, $4,000 in year 3, $3,500 in year 4, and $2,000 in year 5. What is the payback period of the investment?

SOLUTION**tips**

Year	CF_t	Cumulative CF_t
0	($10,000)	
1	$3,000	$3,000
2	$3,500	$6,500
3	$4,000	$10,500
4	$3,500	
5	$2,000	

Therefore, payback period is between two and three years:

$$\text{PB} = \text{Years before cost recovery} + \frac{\text{Remaining cost to recover}}{\text{Cash flow in Year 3}}$$