

UNIT 6 – APPRAISAL CRITERIA

1. WHAT IS PROJECT APPRAISAL?

Project Appraisal is the systematic and comprehensive analysis of an investment proposal (a project) to determine its viability, sustainability, and alignment with the organization's strategic objectives before resources are committed. It involves evaluating various facets of the project, including financial, economic, technical, managerial, and social aspects.

Think of project appraisal as a thorough background check on a business idea. Before a company spends millions building a new factory or launching a new product, they need to be sure it will be profitable and worth the risk. Appraisal uses specific tools (criteria) to see if the expected future benefits outweigh the initial costs.

Objectives of Appraisal:

1. To select the most profitable or strategically important projects from multiple alternatives.
2. To allocate scarce resources (like capital and skilled labour) efficiently.
3. To ensure the project aligns with the company's long-term goals.

2. DEFINING CASH FLOW (CF)

Cash flow is the movement of money into (inflows) and out of (outflows) a business or project over a specific period. For project appraisal, it is crucial to clearly define which cash flows are relevant, which changes based on the perspective.

A. Cash Flow from Long-Term Equity (Shareholders' Point of View)

This perspective focuses on the funds remaining for equity holders after all other obligations have been met.

Component	Definition
Relevant Cash Flows	Net Cash Flow to Equity (NCFE): Cash flows available <i>exclusively</i> to the equity investors.
Inflow	Initial Equity Investment (at $t=0$), After-Tax Operating Cash Flows, Salvage Value of assets, Debt Repayment avoided (if debt is fully paid off).
Outflow	Initial equity outlay, interest paid on debt, principal repayment on debt, working capital investments, taxes.
Appraisal Metric	This cash flow stream is discounted using the Cost of Equity (r_e).

This is the money that only belongs to the owners (shareholders). Since the shareholders are only entitled to what's left after the bank loans (debt) are paid back, the cash flows used here *must* exclude all payments to debtholders (interest and principal).

B. Cash Flow from Total Fund (Total Capital Point of View)

This perspective focuses on the total cash generated by the project, irrespective of how it was financed (equity or debt).

Component	Definition
Relevant Cash Flows	Net Cash Flow to Firm (NCFF) / Free Cash Flow (FCF): Cash flows generated by the project that are available to all capital providers (both debt and equity).
Inflow	Total Initial Investment (Debt + Equity), After-Tax Operating Cash Flows before interest and principal payments, Salvage Value of assets.
Outflow	Total initial outlay, working capital investments, taxes.
Appraisal Metric	This cash flow stream is discounted using the Weighted Average Cost of Capital (WACC).

This is the money the entire project generates. Since we are looking at the cash generated by the *assets*, we ignore interest expense, as that is a financing decision, not an asset performance issue. Tax is still accounted for, but interest is added back (because it's a financing outflow, not an operating outflow).

3. PROJECT APPRAISAL BY DISCOUNTING AND NON-DISCOUNTING CRITERIA

Project appraisal methods are broadly categorized based on whether they account for the Time Value of Money (TVM)—the idea that a dollar today is worth more than a dollar tomorrow.

A. Non-Discounting Criteria (Ignoring TVM)

These methods are simple to calculate but ignore the crucial element of when cash flows occur.

i. Payback Period (PP)

- The length of time required for the cumulative cash inflows from a project to recover the initial investment outlay.
- Shorter Payback Period is preferred. A project is accepted if its PP is less than the predetermined standard PP set by the management.
- **Formula (Uniform CF):**

$$PP = \text{Annual Cash Inflow} / \text{Initial Investment}$$

- **Explanation:** "How quickly do I get my initial money back?" This metric focuses on liquidity and risk—the faster the recovery, the less time the money is exposed to risk.

ii. Accounting Rate of Return (ARR) / Average Rate of Return (AROR)

- A ratio that measures the average annual net income (accounting profit) generated by a project as a percentage of the average or initial investment.
- Accept the project if the ARR is greater than the target rate of return. Higher ARR is preferred.
- **Formula:**

$$ARR = \text{Average Investment} / \text{Average Annual Net Income} \times 100$$

- This is similar to calculating the ROI (Return on Investment) for a single year, but it uses profit (after depreciation and tax), not cash flow, and averages it over the project life.

B. Discounting Criteria (Considering TVM)

These are considered superior methods as they explicitly use a discount rate to bring all future cash flows back to their present value (PV).

i. Net Present Value (NPV)

- The difference between the Present Value of all future expected cash inflows and the Present Value of the project's cash outflows (typically the initial investment).
- A project with a positive NPV ($NPV > 0$) is accepted, as it means the project is expected to generate a return greater than the required rate of return (cost of capital). A project with a negative NPV ($NPV < 0$) is rejected.
- If you convert every dollar the project will generate in the future into today's dollars, will that total value be greater than what you spent today? If yes ($NPV > 0$), the project adds value to the firm.

ii. Internal Rate of Return (IRR)

- The discount rate at which the Net Present Value (NPV) of a project becomes zero. It represents the actual or inherent rate of return that the project is expected to yield.
- Accept the project if the IRR is greater than the company's required rate of return (Cost of Capital, K). If $IRR > K$, accept. If $IRR < K$, reject.
- What is the maximum percentage return this project is actually giving me? If that percentage is higher than the minimum return my investors expect (my cost of capital), then the project is a good investment.

4. APPRAISING PROJECTS WITH SPECIAL FEATURES

Standard appraisal criteria often rely on simplifying assumptions (e.g., projects have the same life, capital is unlimited). Special features require modifications to the standard methods.

i. Projects with Unequal Lives

When comparing two mutually exclusive projects (A and B) with different life spans (e.g., Project A: 3 years, Project B: 6 years), a direct comparison of NPVs is misleading.

- **Solution:** Use the **Equivalent Annual Annuity (EAA)** method.

- EAA converts the NPV of a project into an equal annual cash flow equivalent over its life.
- **Decision Rule:** Select the project with the higher EAA.

ii. Projects Subject to Capital Rationing

This occurs when a firm has profitable projects ($NPV > 0$) but lacks sufficient funds to invest in all of them.

- **Solution:** Use the **Profitability Index (PI)**.
 - PI measures the benefit (PV of Inflows) per dollar of cost (PV of Outflows).

$$PI = \text{Present Value of Cash Outflows} / \text{Present Value of Cash Inflows}$$

- **Decision Rule:** Rank projects by their PI and choose the highest-ranking projects until the available capital is exhausted.

iii. Projects with Risk and Uncertainty

Risk relates to situations where probabilities can be assigned to outcomes; uncertainty is when outcomes cannot be quantified easily.

- **Solutions (Risk-Adjusted Techniques):**
 - **Certainty Equivalent Approach:** Adjusts the uncertain cash flows by multiplying them by a "certainty equivalent coefficient" (a value between 0 and 1) before calculating NPV.
 - **Risk-Adjusted Discount Rate (RADR) Approach:** Increases the discount rate (K) used in the NPV calculation. A higher K (or RADR) penalizes riskier projects by lowering their NPV.
 - **Sensitivity Analysis:** Testing how the NPV changes when one critical variable (e.g., sales volume, cost of materials) is changed, while others are held constant.
 - **Scenario Analysis:** Testing the NPV under different defined scenarios (e.g., 'Best Case,' 'Worst Case,' 'Most Likely Case').