L7 APSC221 - Comparison Methods 2 - ERR

External Rates of Return

Combines internal and external investments to determine the viability of a complex project (defined based on CF).

We convert a non-standard CF into standard by assuming we can invest cash at the MARR rather than invest it in the project (do nothing).

If we do not convert to standard, we will have multiple IRRs.

Precise ERR (need a rate of return)

1. convert non-standard to standard
2. then conduct IRR

Approximate ERR (just need a decision)

1. cash inflows are moved to the future at the MARR
2. discount outflows by an ERR to calculate
3. FW = 0, solve for ERR

Method	Advantages	Disadvantages
IRR	Facilitates comparisons of projects of different sizes Commonly used	Relatively difficult to calculate Multiple IRRs may exist
Present worth	Gives explicit measure of profit contribution	Difficult to compare projects of different sizes
Annual worth	Annual cash flows may have familiar meanings to decision makers	Difficult to compare projects of different sizes
Payback period	Very easy to calculate Commonly used Takes into account the need to have capital recovered quickly	Discriminates against long-term projects Ignores time value of money Ignores the expected service life

- Precise ERR tracks the project’s cash balance at every period, using trial and error to find the rate that makes the future value of all cash flows zero. It applies the MARR to positive balances and the trial ERR to negative balances, requiring careful calculation for each period.
- Approximate ERR is simpler. It moves all net receipts forward to the end at the MARR, and all net disbursements forward at an unknown rate. Then it solves for the rate that makes these two totals equal. This method does not track the actual timing of positive and negative balances, so it is less accurate but much faster.