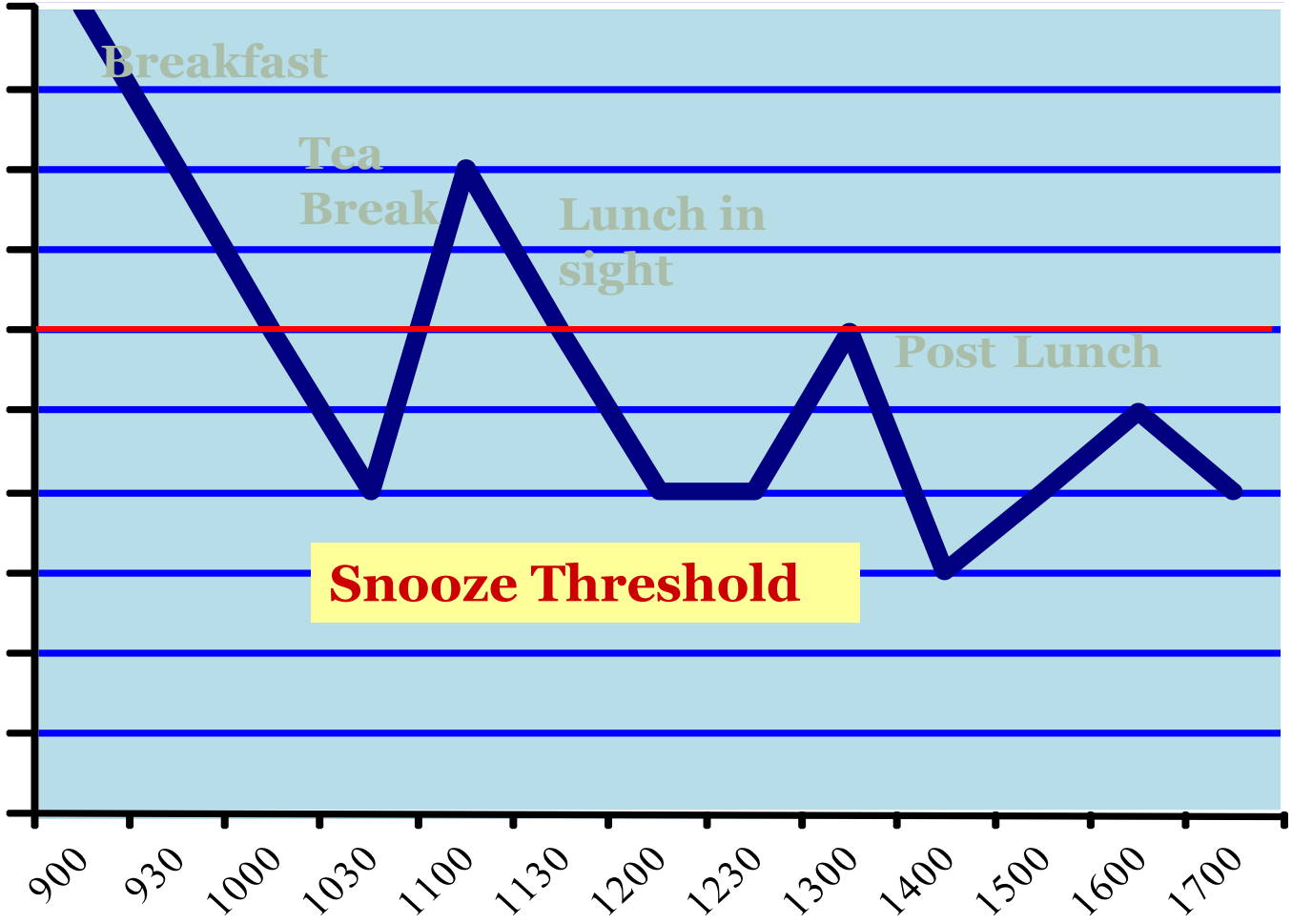
Project Appraisal

Importance of Timing



Attention levels during a Day like this

KEY TAKEAWAYS

- Techniques used to appraise projects

CHARACTERISTICS OF PROJECTS

- **SUBSTANTIAL CASH OUTLAYS TO-DAY**
- **BENEFITS EXTEND INTO THE FUTURE**
- **IRREVERSIBLE DECISIONS**

Project Classifications

- Replacement Decisions

  Maintain Existing Operations
- Expansion Decisions

  Increasing Existing Operations
- Diversification Projects
- Independent Projects vs Dependent Projects

Kinds of Appraisal

- **Marketing**
- **Technical**
- **Financial**
- **Economic**
- **Environmental**

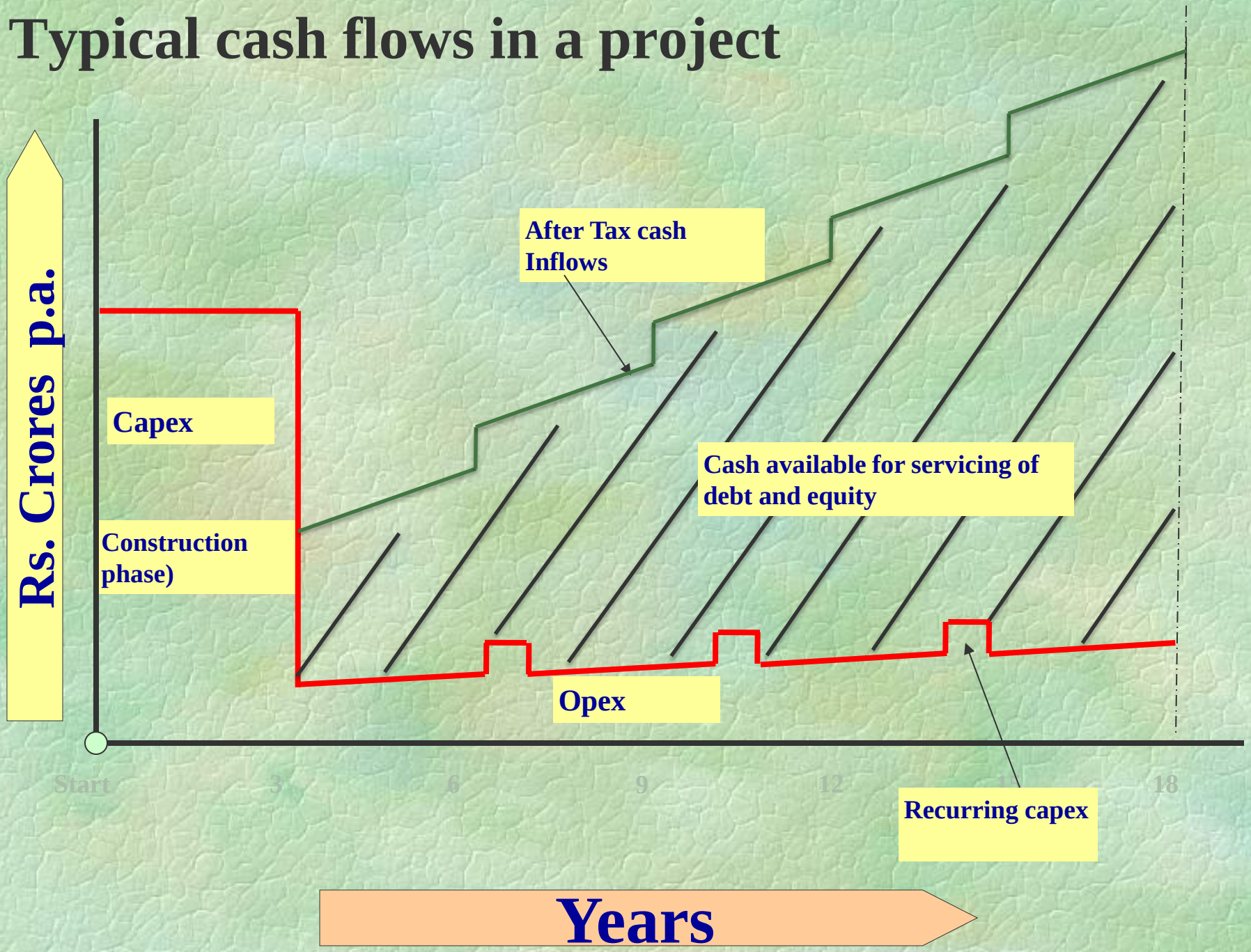
What can go wrong?

- Technology failures
- Force majeure or necessary variations
- Time overrun leading to cost overrun
- Permission not forthcoming or subject to costly conditions
- The project may take longer to break even
- Initial teething problems may continue to dog the project long after commercial production has commenced ➔ decline in capacity utilisation

What can go wrong?

- Projected sales volume not achieved
- Actual sales realisation per unit < projected sales price/unit
- Input costs may go up sharply

Typical cash flows in a project



Investment Appraisal

Basic information

1) Cost of investment project.
2) Estimated life of project.
3) Estimated net cash inflows from project.
4) Estimated residual value of project at the end of its life
5) Cost of capital.
6) Taxation implications of project.
7) Inflation rates and effect on project.

Categorisation of Cash Flows

Terminal Cash Flows
Recovery of Salvage Value
Working Capital

Operating Cash Flows= PAT + Depreciation

Initial Cash Flows
Direct - Cost of Asset
- Increase in working Capital
Indirect - Disposal of old asset

DECISION MAKING

	CASH FLOWS					
YEAR	0	1	2	3	4	5
A	-1000	100	900	100	-100	-400
B	-1000	0	0	300	700	1300
C	-1000	100	200	300	400	1250
D	-1000	200	300	500	500	600

Payback Period

- Number of years required to recover back the investment
- Year before full recovery of investment +(Unrecovered cost / Total Cash Flow during the year)

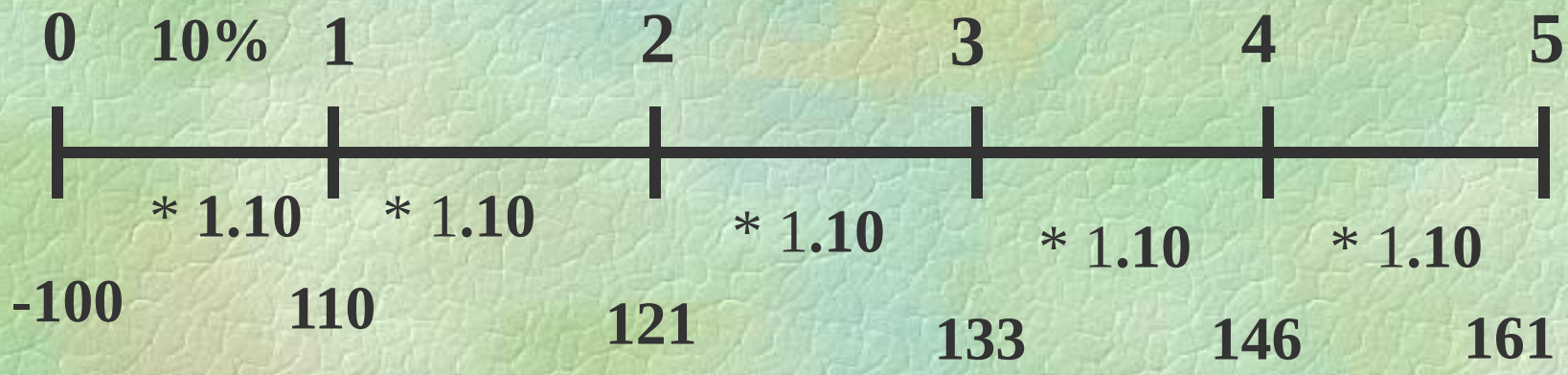
DECISION MAKING -ARR

	CASH FLOWS						
YEAR	0	1	2	3	4	5	
A	-1000	100	900	100	-100	-400	-8
B	-1000	0	0	300	700	1300	26
C	-1000	100	200	300	400	1250	25
D	-1000	200	300	500	500	600	22

Accounting Rate of Return

- Average Cash Flows =Sum(Cash Flows)/N
- N= Number of Years
- Depreciation = Investment /Life of asset
- PAT= Cash Flow-Depreciation
- ARR=Avg PAT/Avg Investment

TIME VALUE OF MONEY



$$FVn = PV(1+i)^n$$

$$PV = \frac{FVn}{(1+i)^n}$$

Net Present Value - NPV

YEAR	0	1	2	3	4	5	
A	-1000	100	900	100	-100	-400	
B	-1000	0	0	300	700	1300	
C	-1000	100	200	300	400	1250	
D	-1000	200	300	500	500	600	
PV @ 10%	1.000	0.909	0.826	0.751	0.683	0.621	NPV
A	-1000	90.9	744	75.1	-68	-248.4	-407
B	-1000	0	0	225	478	807.2	511
C	-1000	90.9	165	225	273	776.2	531
D	-1000	182	248	376	342	372.6	519

INTERNAL RATE OF RETURN (IRR)

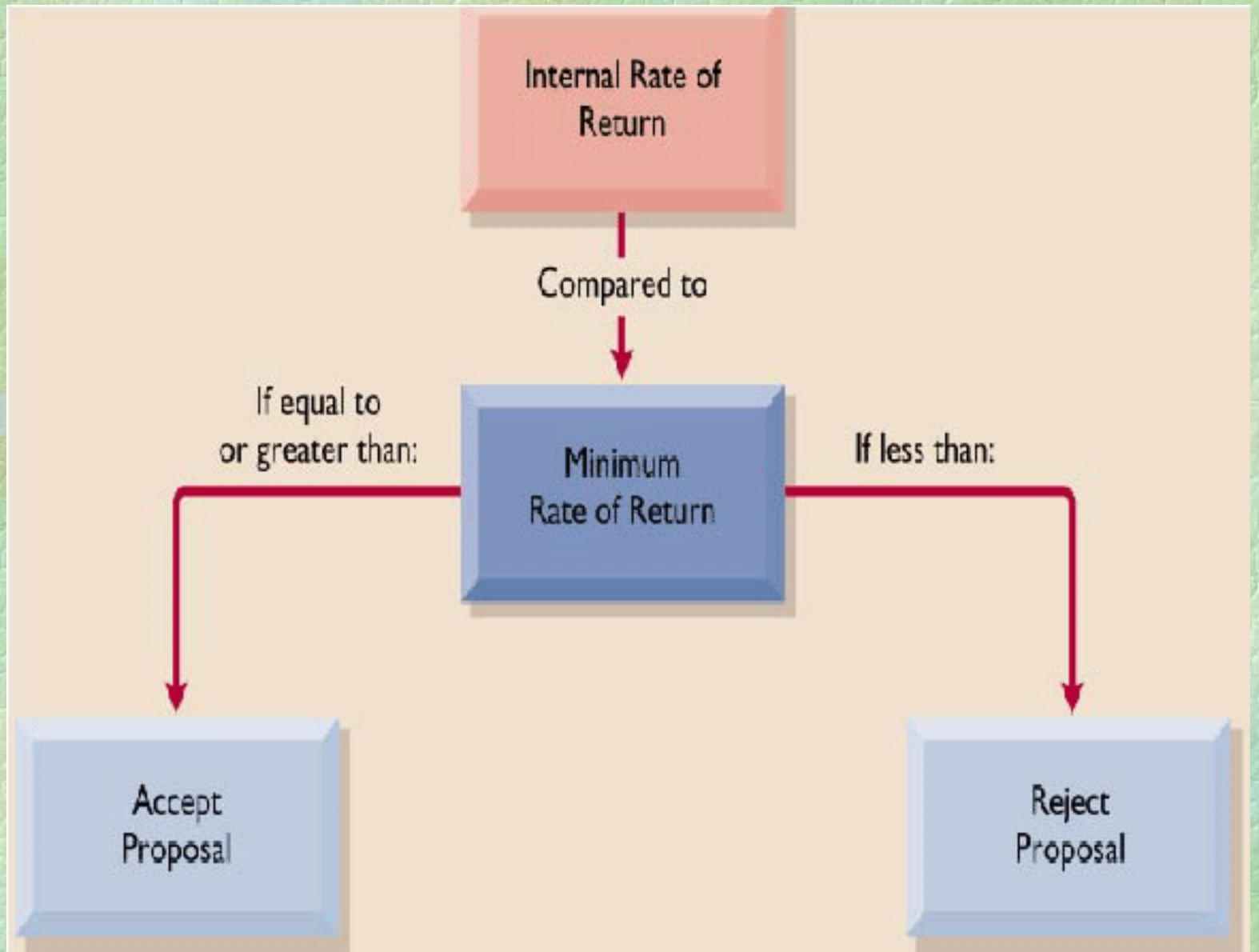
A	-1000	100	900	100	-100	-400	-200%
B	-1000	0	0	300	700	1300	21%
C	-1000	100	200	300	400	1250	23%
D	-1000	200	300	500	500	600	25%
PV @ 10%	1.000	0.909	0.826	0.751	0.683	0.621	IRR

Internal Rate of Return

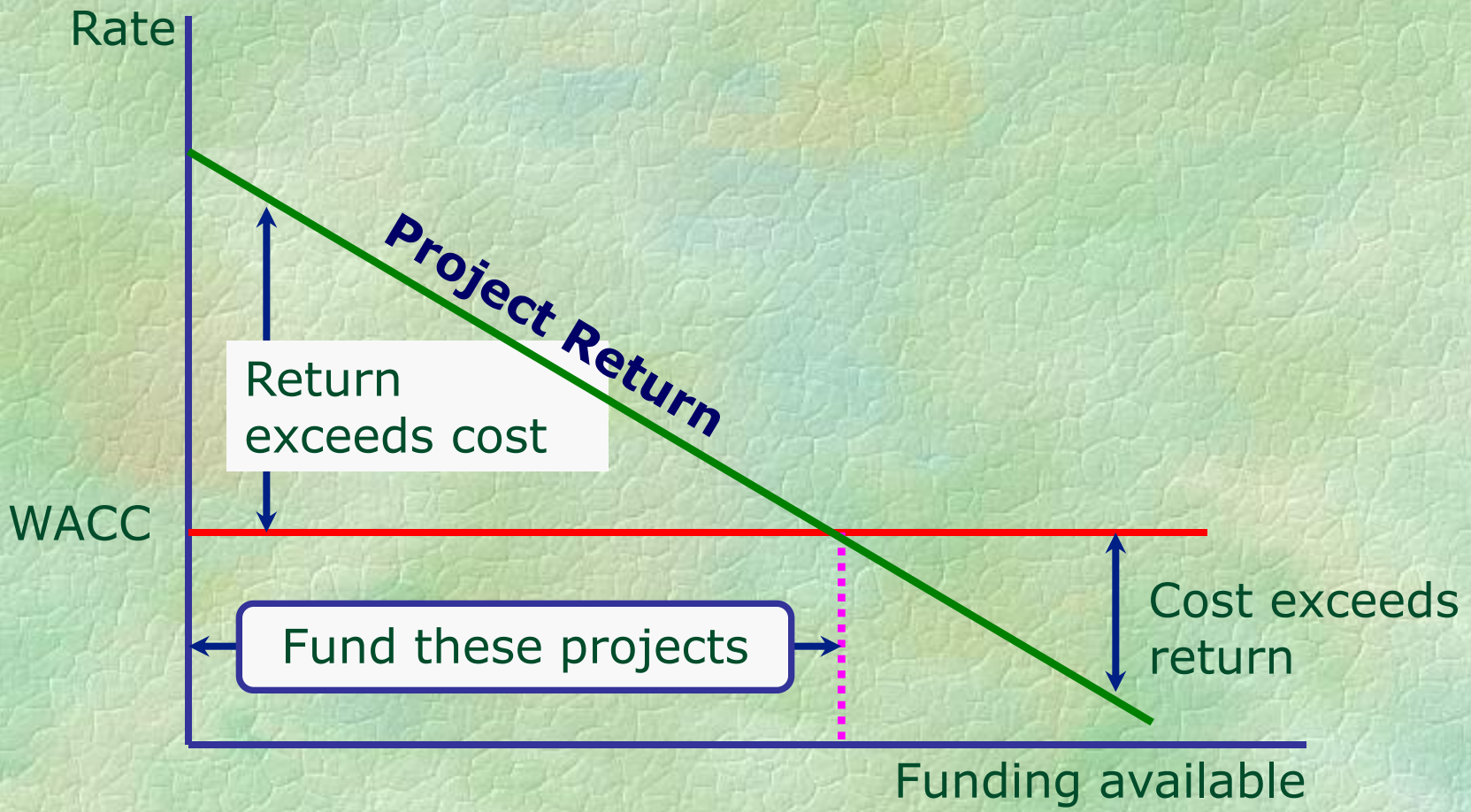
The rate at which the present value of the total cash outflows becomes equal to the present value of the total cash inflows.

The interest yield of the potential investment.

Internal Rate of Return



The Optimal Capital Budget



TECHNIQUE FOR CAPITAL BUDGETING
ESSENTIAL CHARACTERISTICS

1. ALL CASH FLOWS SHOULD BE CONSIDERED

2. ALL CASH FLOWS SHOULD DISCOUNTED AT OPPORTUNITY COST OF FUNDS

3. ENSURE SELECTION OF THAT PROJECT WHICH MAXIMISES PROFITS

4. ENABLE ONE PROJECT TO BE CONSIDERED INDEPENDENTLY FROM ALL OTHERS

RULES FOR PROJECTING CASH FLOWS

1. **PROJECT CASH FLOWS OVER USEFUL LIFE**

2. **CONSIDER INCREMENTAL CASH FLOWS RESULTING FROM THE INVESTMENT DECISION**

3. **CONSIDER AFTER - TAX CASH FLOWS (PAT + DEPRECIATION)**

4. **CONSIDER IMPACT OF CHANGES IN WORKING CAPITAL AND SALVAGE VALUE**

5. **IGNORE INTEREST& SUNK COSTS**

6. **INCLUDE OPPORTUNITY COSTS & INFLATION**

COMPARISON OF NPV & IRR METHODS

⇒ REINVESTMENT RATE ASSUMPTION

⇒ VALUE ADDITIVITY PRINCIPLE

⇒ MULTIPLE RATES

RANKING OF PROJECTS

THE FOLLOWING PROJECTS ARE AVAILABLE FOR INVESTMENT Rs. 000s

	OUTLAY	NPV	IRR	PI
PROJECT A	300	40	18	1.133
PROJECT B	250	30	16	1.120
PROJECT C	250	35	17	1.140
PROJECT D	150	22	19	1.146
PROJECT E	100	15	18	1.150
PROJECT F	50	10	16	1.200

PROFITABILITY INDEX=PRESENT VALUE OF INFLOWS
PRESENT VALUE OF OUTFLOWS