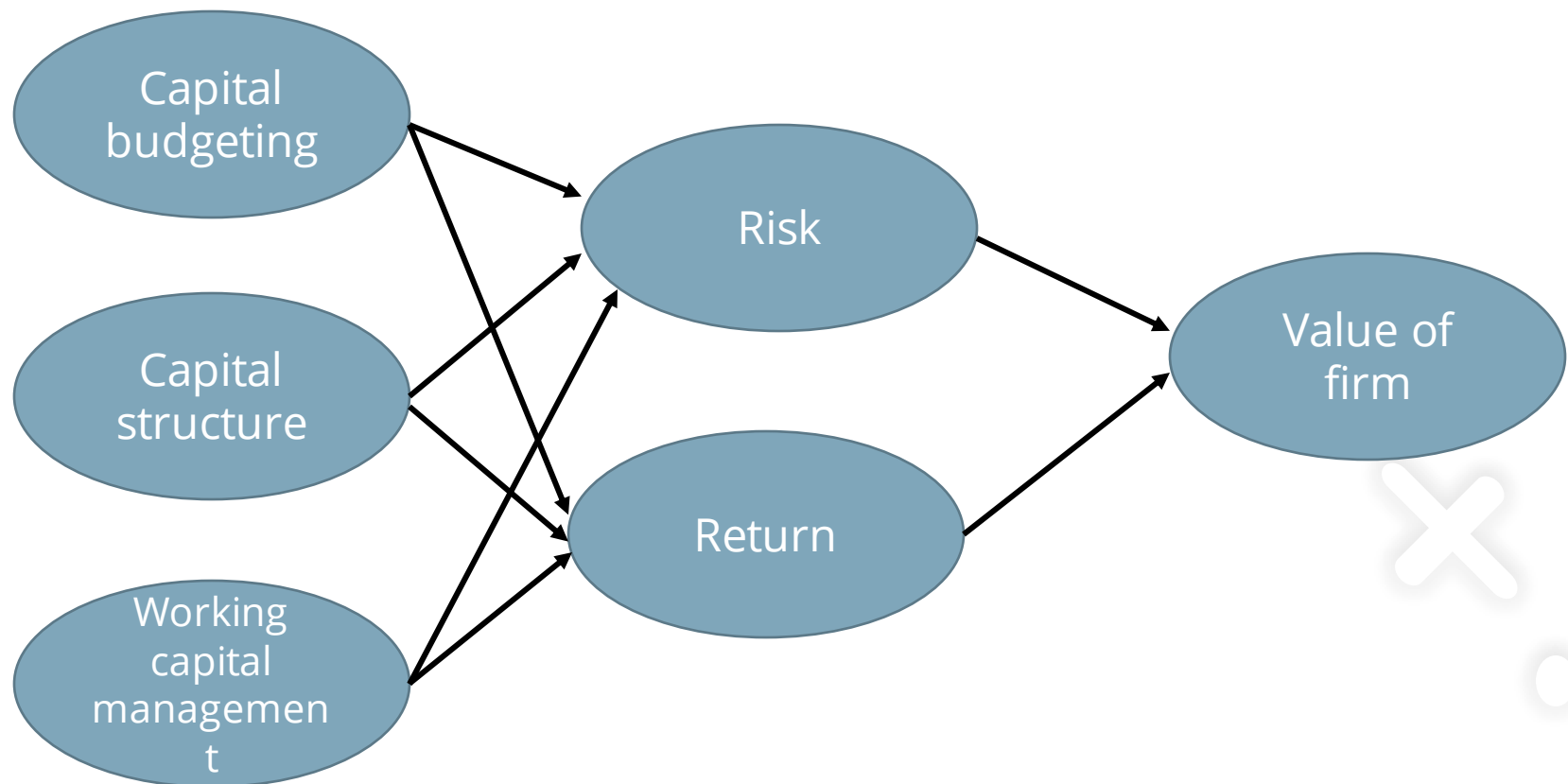


Capital Budgeting

Course Instructor: Punita Rajpurohit
Financial Management
University Elective

Risk is All Pervasive!

- + Every decision has a element of risk
- + Assessment of risk is an important part of decision making



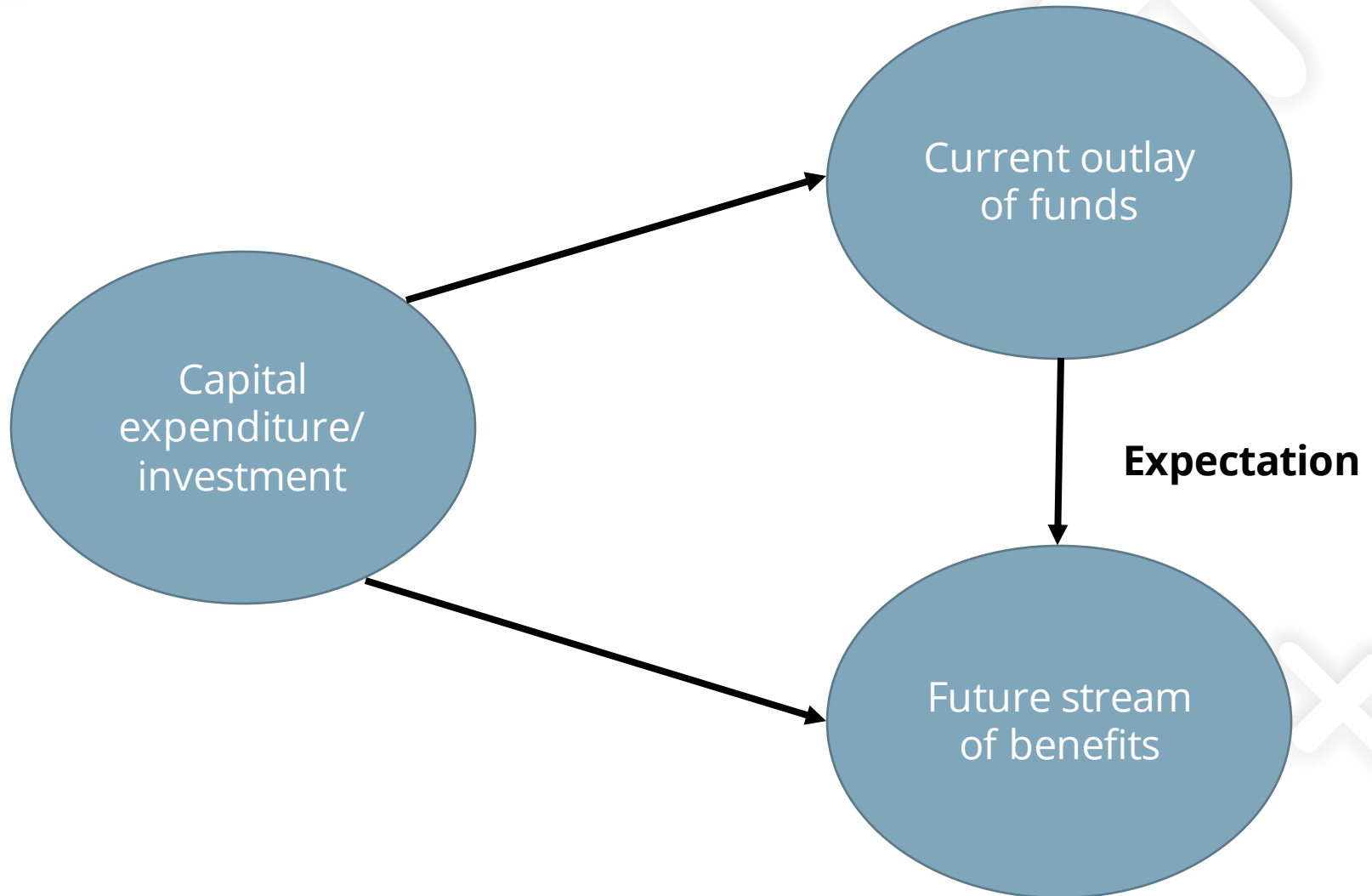
Topics

- +Capital budgeting – meaning, features, process
- +Techniques of capital budgeting
- +Numericals

Long Term Investments

- +Investment in new production plant
- +Buying fleet of aeroplanes
- +Buying fleet of vehicles
- +Technology adoption like computerisation of banking
- +Research, development and innovation like vaccine

Capital Expenditure/Investment



Features of Capital Budgeting

- + Long term consequences
- + Substantial outlays
- + Irreversible

Capital Budgeting Process

- + Identification of potential investment opportunities (external market, corporate strategy)
- + Assembling of proposed investments (different perspectives)
- + Decision making (approval upto certain limit)
- + Preparation of capital budget and appropriations (blanket appropriations)
- + Implementation (responsibility accounting, network techniques)
- + Performance review (post completion audit, feedback device)

Capital Budgeting Techniques (Investment Criteria)

- + Net present value (NPV)
- + Pay back period (PBP)
- + Discounted pay back period (DPBP)
- + Profitability index (PI)
- + Internal Rate of Return (IRR)

Pay Back Period (PBP)

- +Time required to recover the initial investment
- +Sum of inflows to cover initial investment
- +Shorter the payback period, more desirable is the investment
- +Compare with maximum acceptable payback period; if more, reject investment and if less or equal, accept investment

Advantages and Disadvantages - PBP

- +Simple
- +Favours investment which generate substantial CF in initial years
- +Do not favour investment which generate substantial CF in later years
- +Fails to consider time value of money
- +Capital recovery and not profitability

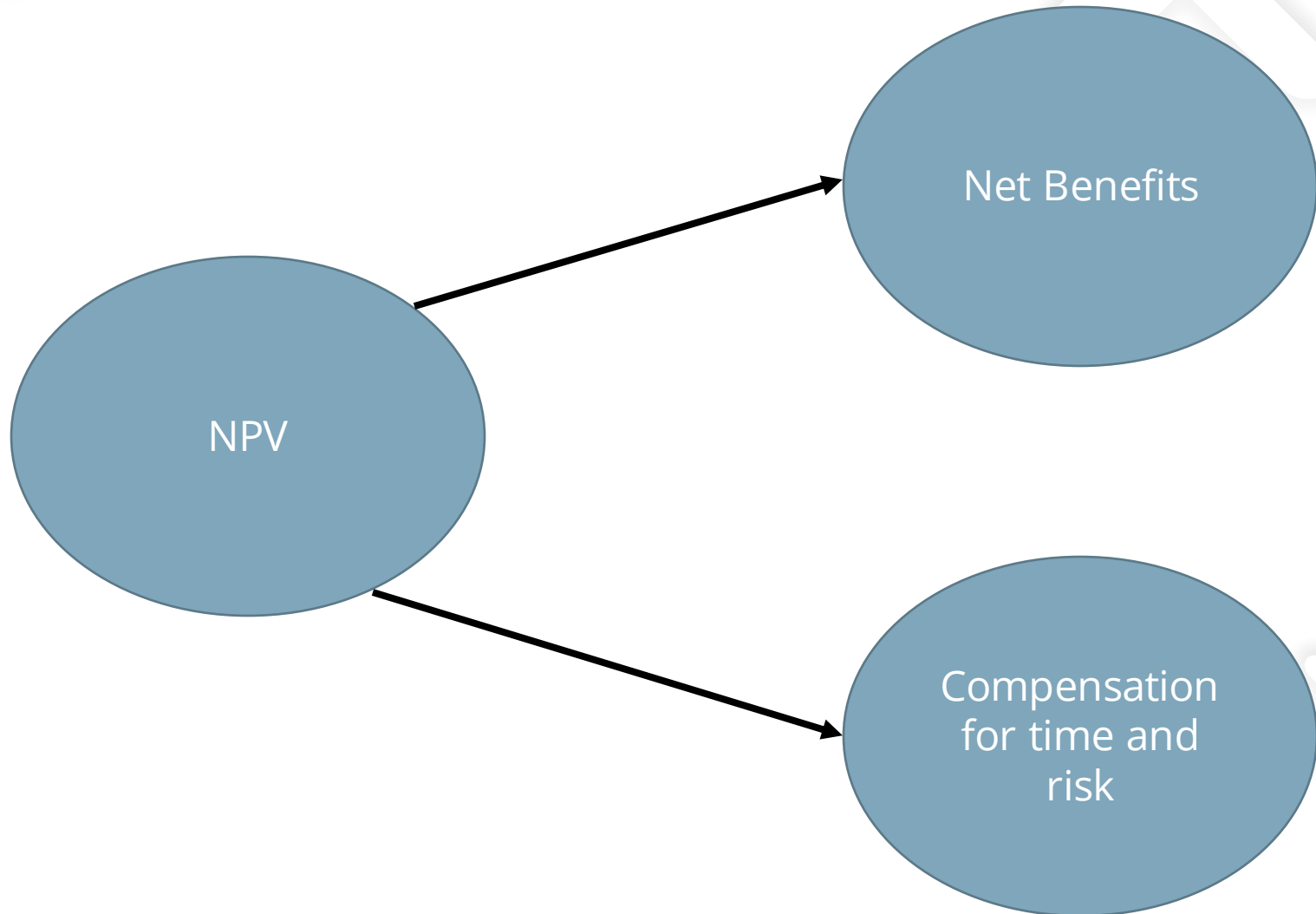
Discounted PBP

- + Calculation of PBP using discounted CFs
- + Takes into account time value of money

Net Present Value (NPV)

- + Forecast CF generated by project over its life
- + Calculate opportunity cost of capital (reflect time value of money and risk inherent in the project)
- + Discount CFs using opportunity cost of capital (PV of uneven series – sum of discounted CFs is PV)
- + Calculate NPV by deducting initial investment from PV
- + Decision rule:
 - Invest if $NPV > 0$
 - Reject if $NPV < 0$
 - Indifference if $NPV = 0$

NPV



Properties of NPV Rule

- +Additive
- +Intermediate CFs are invested at COC

Limitations of NPV

- + Expressed in absolute terms, not relative terms – scale of investment not factored in
- + Life of project – uneven life; bias towards project with longer duration

Profitability Index (PI)

- + $PI = PV \text{ of benefits} / \text{initial investment}$
- + Measure NPV per rupee of outlay
- + Distinguish between small and large scale investments
- + Ranking in order of efficient use of capital
- + Not additive
- + Decision criteria
 - >1 - accept
 - <1 - reject
 - $=1$ - indifference

Internal Rate of Return (IRR)

- + Discount rate which makes NPV zero
- + Discount rate which equates PV of future CF with initial outlay
- + Trial and error
 - Calculate NPV of two closest rates
 - Sum of absolute values of NPV
 - Calculate ratio of NPV of smaller discount rate to sum in step 2 and multiply it with difference
 - Add number obtained in step 3 to smaller discount rate
- + $IRR > COC$ – accept
- + $IRR < COC$ – reject