



## Session 3 & 4 - Risks & Financial Mathematics

# ✓ Presentation Order

- Systematic v/s Unsystematic
- Different Types of risk
- Risk Measurement Tools
- Time value of Money



Systematic  
Risk

vs



Unsystematic  
Risk

## #1. Meaning



Risk/Threat associated with the market or the segment as a whole.



Hazard associated with specific security, firm or industry.

## #2. Impact



Large number of securities in the market.



Restricted to the specific company or industry.

### #3. Controllability



Cannot  
be controlled.



Controllable.

### #4. Hedging

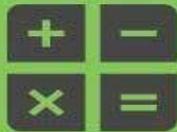


Allocation  
of the Assets.

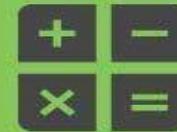


Diversification  
of the Portfolio.

## #5. Types

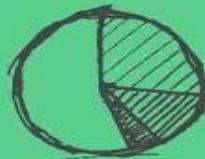


Interest  
Risk and Market Risk.

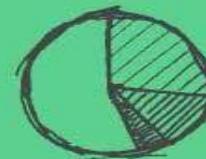


Financial  
and Business specific Risk.

## #6. Responsible Factors



External.



Internal.

## #7. Avoidance



Cannot  
be Avoided.



Can  
be avoided or resolved at a  
quicker pace.

# Types of risk an Investor Faces

# Systematic Risk

Equity and Debt

- Inflation Risk
- Currency Risk
- Political Risk

Debt

- Interest Rate / Reinvestment Risk

# Unsystematic Risk

## Debt

- Liquidity Risk
- Credit Risk

## Equity and Debt

- Business Risk
- Operational Risk

## Portfolio Risk

- Concentration Risk
- Horizon Risk
- Longevity Risk

# ✓ Portfolio Level Risk

## Concentration Risk

- Sector
- Security

## Horizon Risk

## Longevity Risk

# Risk Measurement Tools

# Risk Measurement Tools

## Standard Deviation

Deviation from its own past standards

Higher the number more the risk

Applicable to Equity & Debt both

## Beta

Measures risk compared a diversified equity index

Higher the number more the risk

Applicable to Equity

# Risk Adjusted Ratio

## Sharpe

(Portfolio Return  
*minus* Risk Free  
return) / Std. Dev  
of the Portfolio  
Returns

Higher the number  
more superior the  
risk-adjusted  
returns

Applicable to  
Equity & Debt both

## Treynor

(Portfolio Return  
*minus* Risk Free  
return) / Beta of the  
Portfolio Returns

Higher the number  
more superior the  
risk-adjusted  
returns

Applicable to  
Equity

## Alpha

Portfolio Return  
*minus* Index  
Return

Higher the number  
better the  
performance

Applicable to  
diversified equity  
schemes

# Financial Mathematics

# Know your numbers

Time Value of Money

FV

PV

Rate

Nper

Regular Transaction

SIP

EMI

Returns

IRR

XIRR

# Thank You