Ch. 9 Analysis of Mutual Funds

By

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Types of Risks

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Risks
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Systematic
Risk
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Unsystematic
Risk
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When all the stocks in the market are affected, such risk is called as Systematic Risk

When shares or securities of a specific industry is affected, it is called as Unsystematic Risk.

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Undiversifyable Risk
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Diversifyable Risk
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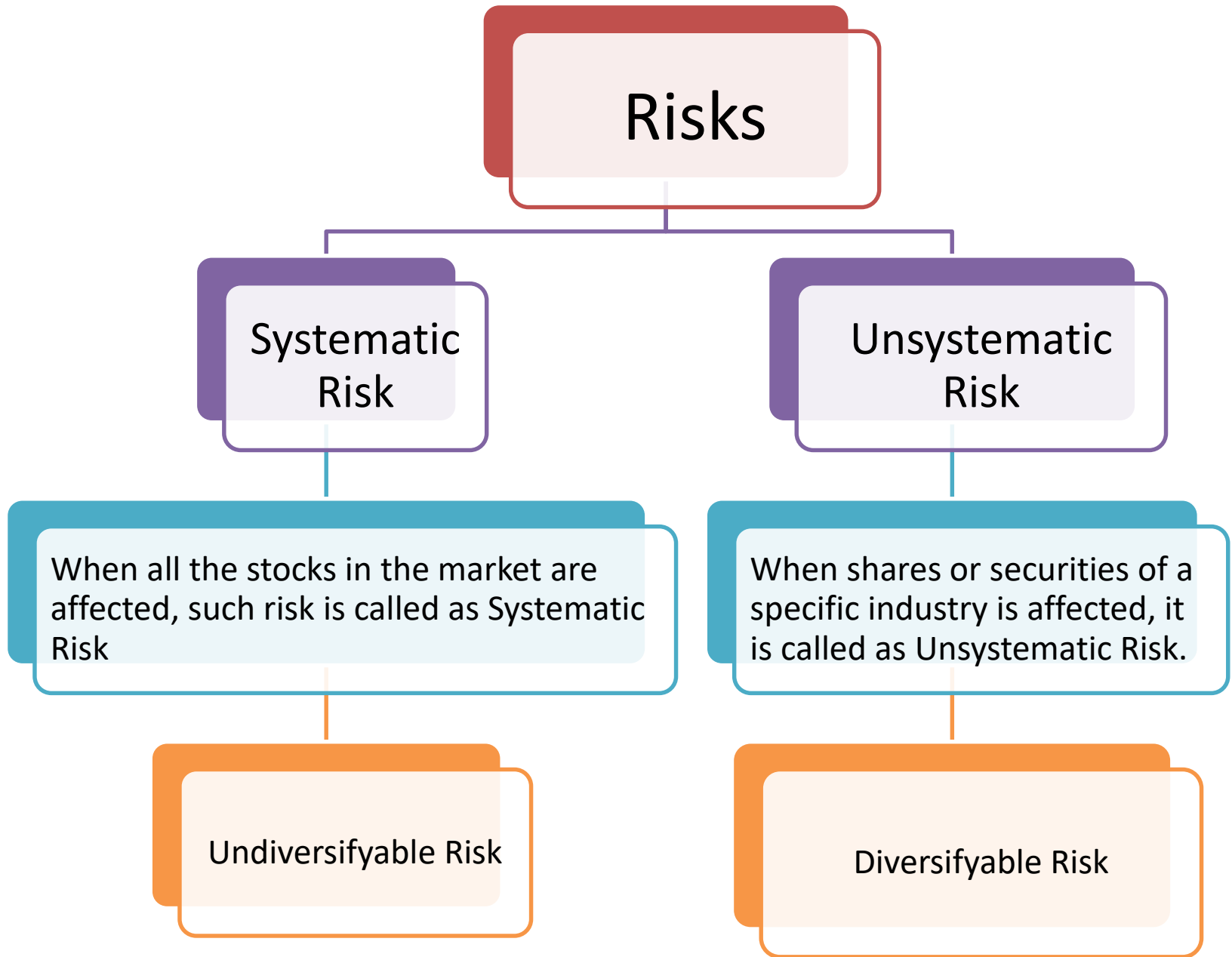
Risk Measurement Techniques

- Sharpe's Ratio/ Formula
- Trenor's Ratio / Formula
- Jensen's Alpha Ratio
- Computation of Beta

Sharpe's Ratio

Sharpe's Ratio

Sharpe's ratio is defined as follows :-

$$\text{Sharpe's ratio} = \frac{R_p - R_f}{\sigma_p}$$

where, R_p = Return of Portfolio

R_f = Risk Free return

σ_p = Standard Deviation of Portfolio.

- Sharpe's ratio calculates the <u>excess return</u> per unit of <u>total risk</u>
- Total risk includes Systematic risk and unsystematic risk
- Sharpe's ratio cannot be used individually.
- Sharpe's ratio must be compared with other relevant sharpe ratio's to arrive at a conclusion.
- While comparing, higher the sharpe, better is the position.

Trenor's Ratio

$$\text{Trenor's Ratio}$$

$$\text{Trenor's Ratio} = \frac{R_p - R_f}{\beta_p}$$

where β_p = Beta of Portfolio

Trenor's ratio calculates the <u>excess return </u>per unit of <u>Systematic risk</u>
Trenor's ratio cannot be used individually.
Trenor's ratio must be compared with other relevant Trenor's ratio's to arrive at a conclusion.
While comparing, higher the Trenor, better is the position.

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Jensen's Alpha ratio

Before learning Alpha ratio, we will understand Expected rate of return based on CAPM.

CAPM — Capital Asset Pricing method

$$E(R) = R_F + \beta (R_m - R_F)$$

where,

$E(R)$ = Expected rate of return

R_F = Risk free return (Govt Bonds)

R_m = Market rate of return

β = Beta factor associated (Risk)

Q.1. Modern Ltd's share beta factor is 1.40. The risk free rate of interest on Government Securities is 9%. The expected rate of return on company equity share is 16%. Calculate E(R) based on capital asset pricing model.

Ans:- As per CAPM,

$$E(R) = R_F + \beta (R_m - R_F)$$

$$= 0.09 + 1.4 (0.16 - 0.09)$$

$$= 0.09 + 1.4 (0.07)$$

$$= 0.09 + 0.098$$

$$= 0.188 \text{ ie) } \underline{18.8\%}$$

eg 2) $E(R) = 0.10 + 1.2 (0.14 - 0.10)$

$$= 0.10 + 1.2 (0.04)$$

$$= 0.10 + 0.048 = 0.148 \text{ ie) } 14.8\%$$

Jensen Alpha

$$\alpha_p = R_p - \underbrace{\left[R_F + \beta (R_m - R_F)\right]}_{\text{Expected rate as per CAPM}}$$

1) α can be positive or negative.

2) Positive α indicates that our portfolio has exceeded the market returns (overperformed)

3) Negative α indicates that our portfolio has underperformed in the market.

4) In case of multiple Portfolios, then Portfolio with highest α must be purchased

Evaluating Performance of Mutual Funds

1) <u>Net Asset Value (NAV)</u>

It is the amount which a unit holder would receive if the mutual fund were wound up. An investor in mutual fund is a part owner of assets and liabilities

       NAV is calculated every day for every mutual fund and it changes every day as well.

It is calculated by deducting all liabilities (except capital) of the fund form the realizable value of assets and dividing by number of outstanding units in the mutual fund.

$$NAV = \frac{\text{Net assets (Total Assets} - \text{Liabilities)}}{\text{Number of outstanding units}}$$

Net Assets = Market value of Investments + Receivables + Other accrued income + Other Assets – Accrued expenses – Other payable – Other Liabilities

2) Cost incurred by Mutual Fund:

- Higher cost reduce the returns of a mutual fund. The higher cost results in poor performance of mutual funds.

- There are two types of cost involved:
  - Initial cost which are incurred to establish a MF scheme.
  - Ongoing recurring expenses (Mamagement expenses) like cost of qualified staff, administrative cost, advertisement cost excluding brokerage.

- Formulas for calculating ratios:

  a) Expense ratio = Expenses / Average Value of portfolio

3) Return on Investment:

An investor gets 3 types of returns from Mutual Funds:

a) Dividend

b) Capital Gains disbursement

c) Change in NAV's value per unit (Unrealised Capital gains)

For an investor holding mutual funds for more than one year, the one year return will be calculated as follows:

Returns = Dividend + Capital Gains + (Unrealised captial gains /Base net value of assets)

Factors influencing selection of MF

a) Past performance

b) Timing

c) Size of Funds

d) Age of Funds

e) Fund Manager

f) Portfolio Turnover

g) Expenses ratio

h) PE ratio (Price Earning Ratio)