NPTEL

Course Name: Security Analysis and Portfolio Management

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Session 28: Other Portfolio Selection Models

1. Explain Sharpe's Optimization Model for portfolio selection.

   Ans.

   The Portfolio Optimization model suggests the optimal capital weightings for a basket of financial investments that gives the highest return for the least risk. Sharpe's Optimization Model:

- Selection of stock is based on a single criteria
- It is based on the excess return to beta ratio
- It measures the additional return on a stock per unit of non diversifiable risk
- Excess Return to beta ratio = $\frac{R_i - RF}{\text{Beta}}$

2. What are different steps to be considered for Inclusion of Stocks in the Portfolio?

Ans.

Steps for Inclusion of Stocks in the Portfolio:

- Calculate the excess return to beta ratio for each stock under consideration and rank them highest to lowest
- After ranking the securities the next step is to find out a cut-off point (C^*)
- The optimum portfolio consists of investing in all stocks for which excess return to beta ratio is greater than the cut-off point (C^*)

3. Give an example of constructing the Optimal Portfolio.

Ans.
Example:

Security Number	Mean Return (%)	Beta ($ß_i$)	Unsystematic Risk (s^2_{ei})	Risk Free Return (%)	Market Return (%)	Excess Return	Excess Return to Beta	Rank
1	20	1.2	20	8	25	12	10	3
2	24	1.1	15	8	25	16	14.54	1
3	18	1.1	50	8	25	10	9.09	4
4	19	0.8	16	8	25	11	13.75	2

Establishing the Cut-off Rate

Rank No	Security No	Excess Return to Beta	Cut-off rate
1	2	14.54	9.72
2	4	13.75	**10.7238**
3	1	10	10.49
4	2	9.09	10.36

Constructing the Optimal Portfolio

- Proportion to be invested in each security
- Z(1) = (1.1/15) (14.54 -10.7238) = 0.2798
- Z(2) = (0.8/16) (13.75-10.7238) = 0.1513
- Z(1) + Z(2) = 0.2798 +0.1513 = 0.4311
- Percentage invested in security 2 = 0.2798 /0.4311 = 64.9%
- Percentage invested in security 4 =0.1513 /0.4311 =35.1%