NPTEL

Course Name: Security Analysis and Portfolio Management

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Session 22: Markowitz Portfolio Theory

1. Explain Markowitz Portfolio Theory?

Ans.

Markowitz showed that the variance of the rate of return was a meaningful measure of portfolio risk under a reasonable set of assumptions. He also derived a formula for computing the variance of a portfolio. These formulas for the variance of a portfolio not only indicate the importance of diversifying your investments to reduce the total risk of a portfolio, but also showed how to effectively diversify.

Markowitz theory achieved the following:

- Markowitz demonstrated that the variance of the rate of return is a meaningful measure of portfolio risk under reasonable assumptions.
- Derives the expected rate of return for a portfolio of assets and an expected risk
- measure Shows that the variance of the rate of return is a meaningful measure of portfolio risk
- Derives the formula for computing the variance of a portfolio, showing how to effectively diversify a portfolio

2. What is the meaning of Efficient Frontier?

Ans.

- The efficient frontier represents that set of portfolios with the maximum rate of return for every given level of risk, or the minimum risk for every level of return
- Frontier will be portfolios of investments rather than individual securities: Exceptions being the asset with the highest return and the asset with the lowest risk
- Any portfolio that lies on the upper part of the curve is efficient: it gives the maximum expected return for a given level of risk.
- A rational investor will only ever hold a portfolio that lies somewhere on the efficient frontier. The maximum level of risk that the investor will take on determines the position of the portfolio on the line.

3. What is the implication of Macroeconomic Factors towards Systematic Risk?

   Ans.

- Systematic risk is the variability in all risky assets caused by macroeconomic variables
- Examples of Macroeconomic Factors Affecting Systematic Risk: Variability in growth of money supply, Interest rate volatility, Variability in industrial production, corporate earnings, cash flow

4. Differentiate between Systematic and Unsystematic risk.

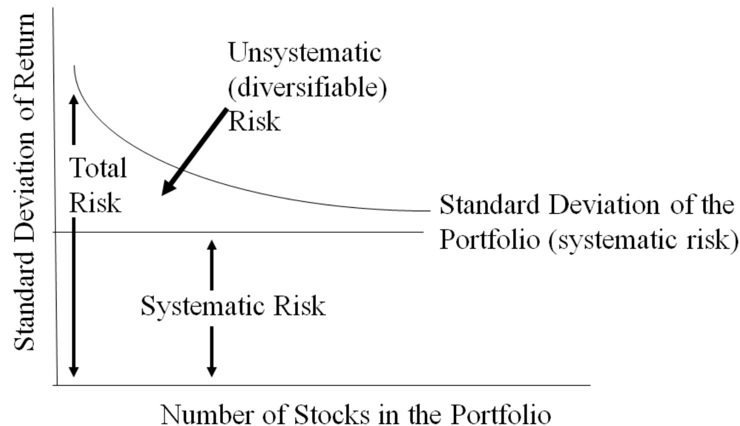
Ans.

Systematic Risk:

- Only systematic risk remains in the market portfolio and is the variability in all risky assets caused by macroeconomic variables
- Systematic risk can be measured by the standard deviation of returns of the market portfolio and can change over time
- Beta measures an asset's systematic risk

Unsystematic Risk:

- It is specific to the company or industry.
- It is also known as "specific risk", this risk is specific to individual stocks. Like business risk and financial risk.
- Unsystematic risk is uncorrelated with systematic risk.
- The part of an asset's risk that is not correlated with the market portfolio



5. How diversification can reduce Unsystematic Risk of a given portfolio?

Ans.

Diversification and the Elimination of Unsystematic Risk:

- The purpose of diversification is to reduce the standard deviation of the total portfolio
- This assumes that imperfect correlations exist among securities
- As the number of securities added to a portfolio increases , the average covariance for the portfolio declines