

# Unit 2: SAPM

Note: The Slides are only for understanding purpose and are not exhaustive in nature. Suggested to refer Text books and / or Reference books/notes.

# Portfolio Analysis & Management:

- A theory of risk and return for securities on a competitive capital market.
- Introduced by Jack Treynor, William Sharpe, John Lintner, Jan Mossin
- Sharpe, Markowitz and Merton Miller jointly received the Nobel Memorial Prize (1990) in Economics for this contribution.

## ➤ **Systematic risk :**

- Risk that influences a large number of assets. Also called *market risk*.
- Uncontrollable; Undiversifiable
- Cannot be eliminated

## ➤ **Unsystematic Risk :**

- Risk that influences a single company or a small group of companies
- Controllable; Diversifiable
- Can be mitigated through diversification

# Key Objectives of Portfolio Management:

- Defining goals and objectives.
- Understanding, accepting and making tradeoffs.
- Identifying, eliminating, minimizing and diversifying risks.
- Monitoring portfolio performance.
- Achieving a desired objectives.

# Factors to consider in choosing the Investment Portfolio:

- Time horizon of the investment.
- Risk tolerance and management.
- Rate of return or yield.
- Diversification to spread the risk.
- Taxation concern.
- Size of the investment units.
- Liquidity and marketability of the securities.
- Security of the principal sum invested.

# Traditional portfolio analysis:

- Under traditional approach, the financial plan of an individual is evaluated with regard to an individual's needs in terms of income and capital appreciation and appropriate securities are selected to meet those needs.
- Steps involved in traditional approach are:
  - Analysis of Constraints.
  - Determination of Objectives.
  - Selection of securities / portfolio.
  - Assessment of Risk and Return.
  - Diversification.

# Markowitz model

## ( Markowitz – Portfolio Theory / Modern approach):

- Portfolio Theory or Modern theory was introduced by Harry Markowitz with his paper ‘ Portfolio Selection’, which appeared in the 1952 edition of ‘Journal of Finance’.
- Prior to Markowitz work, investors focused on assessing the risks and rewards of individual securities in constructing their portfolios.
- Markowitz model is associated with the concept of risk measurement. It is based on the study of Risk and Return Relationship.

- Risk and Return are two important aspects of an investment. Risk is measured by the variance and covariance. Markowitz model contributes about the quantification of risk and need for maximising return.
- Portfolio is a combination of different financial assets. A portfolio is said to be efficient, if it is expected to yield the highest return possible for the lowest risk or given level of risk.



# Assumptions of Markowitz Model:

- Investors desire is to minimize risk and maximize return.
- Investors behave rationally.
- There is a perfect markets exists in the economy.
- Investors have free access to fair and correct information on the returns and risks.

# Diversification:

- Diversification means investing in more than one security, asset, industry with a view to reduce risk.
- Diversification reduces the risk by combining asset classes with low correlation. It is a strategy designed to reduce exposure to risk by combining a variety of investments, such as stocks, bonds, real estates, so on, which are unlikely to all move in the same direction.

- ‘Don’t put all eggs in one basket’ is a well known proverb, which summaries the message that there are benefits from diversification.
- If one invest all his/ her wealth in the shares of a company, there is a chance that the company may collapse and will lose all the money invested.
- Since it is unlikely that all companies will collapse at the same time, a portfolio of shares in several companies is less risky.

# Effects of combining securities:

- Generally it is less risky if an investor holds two securities in his portfolio. This is so because when two securities are taken on a portfolio and if they have negative correlation, the risk can be reduced completely since the loss of one security can offset with the gain on the other.
- This happens in case where one security is more risky as compared to the other.

# The Markowitz Theory:

- Markowitz Theory is based risk and return relationship in the market. He found that diversification can reduce the risk. A single stock portfolio will be good, if the investor expectations are perfect. But in the real world of uncertainty it is not possible to stay with a single security / portfolio. Hence investors prefer to reduce risk through diversification.

- The aim of diversification is not only to reduce risk of a security, but also to reduce the covariance of interactive risk of two or more securities in a portfolio. This theory gives more importance to standard deviation. The portfolio risk is more important factor in determination of diversification.

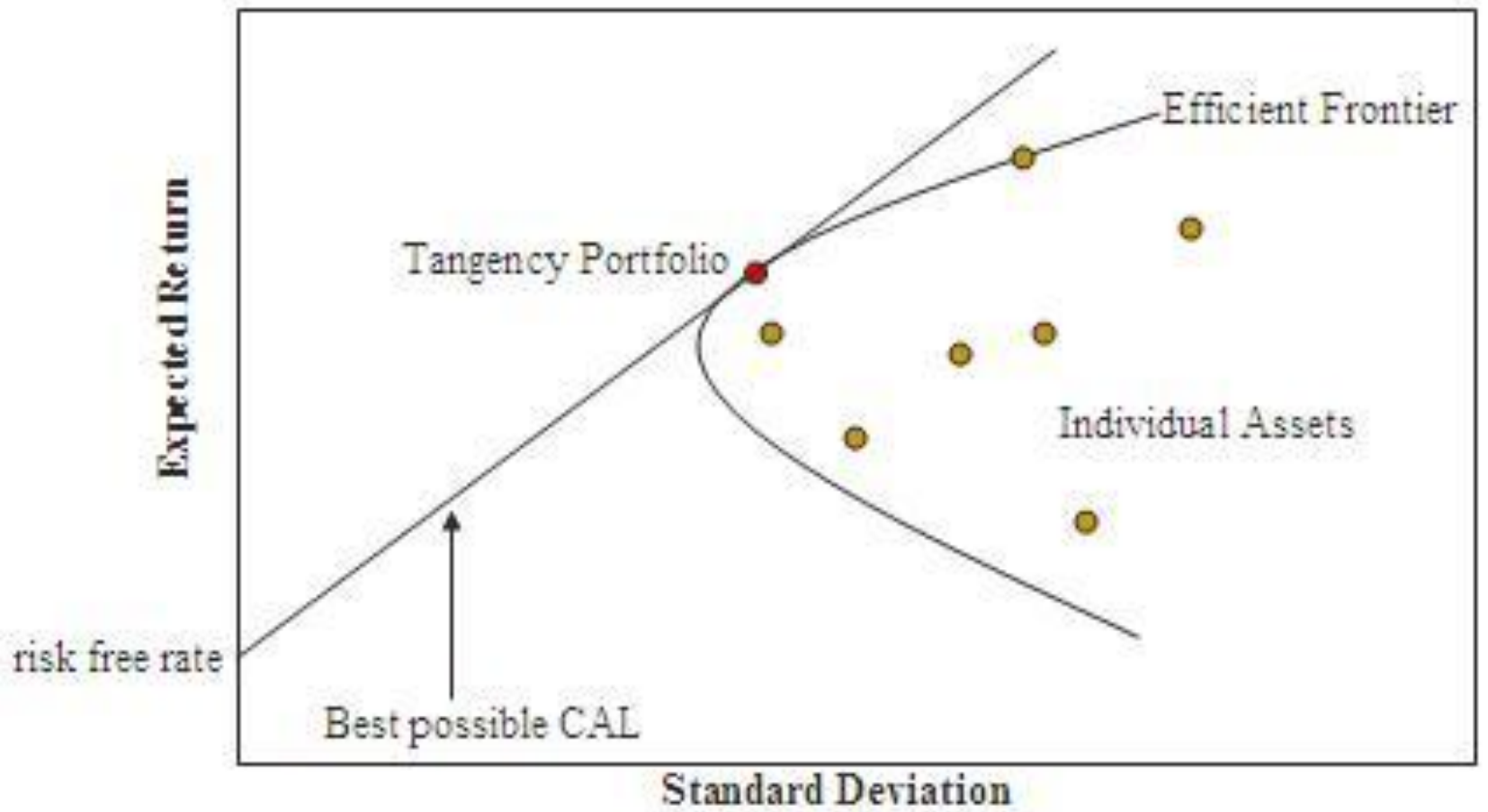
# Parameters considered in Diversification:

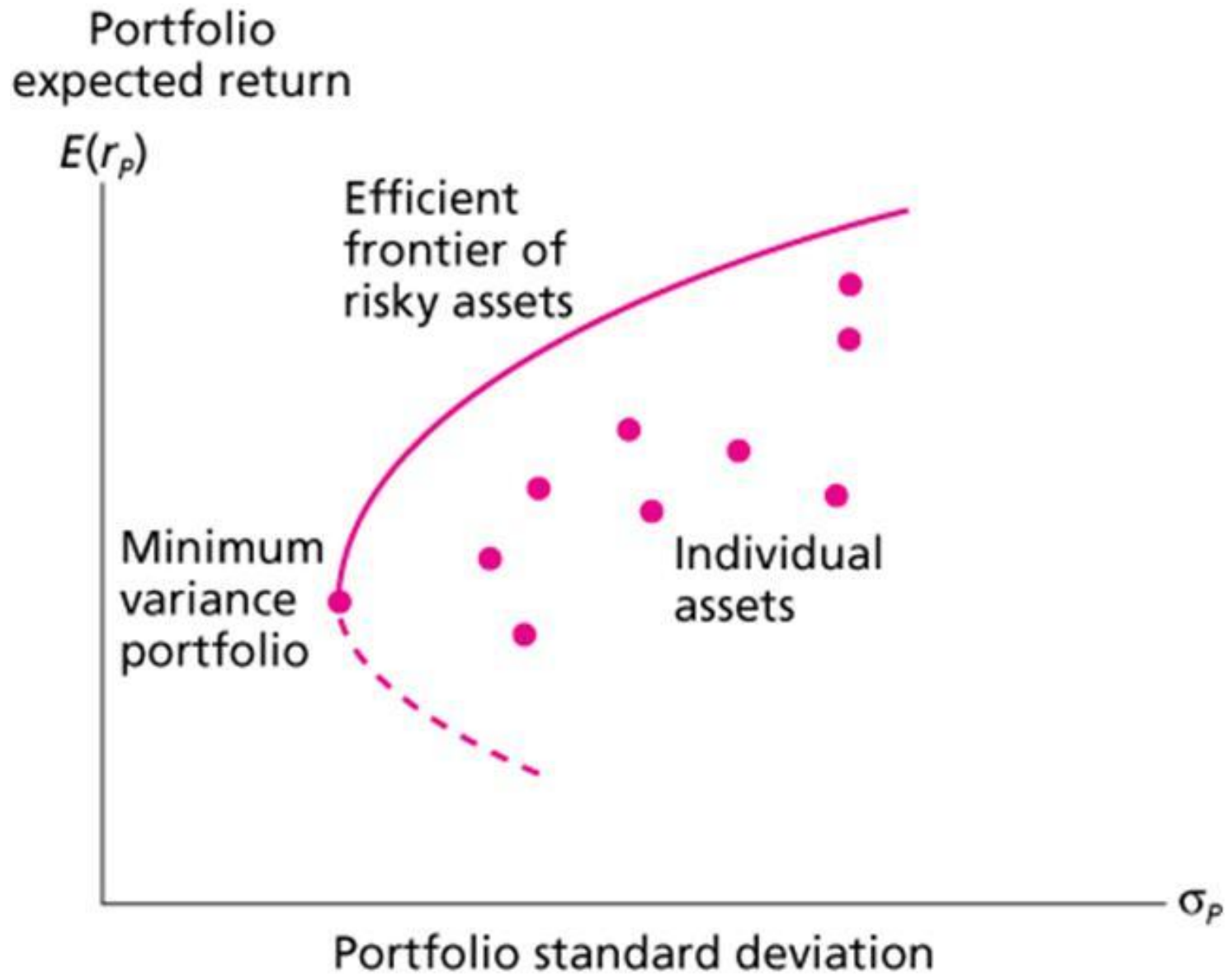
- Expected Return-
- Variability of Returns-
- Variance of one asset to another asset-

# Location of the efficiency frontier:

- In Modern Portfolio Theory, the efficient frontier is an investment portfolio which occupies the 'efficient' parts of the risk-return portfolio. Formally, it is the set of portfolios which satisfy the condition that no other portfolio exists with a higher expected return but with the same standard deviation of return (i.e., the risk). The efficient frontier was formulated by Markowitz in 1952.







# Limitations of Markowitz Model:

- The Model is complex and requires a number of calculations.
- The investor has to get a large amount of inputs, information regarding return, risk and co-variances of returns for each set of securities included in the portfolio.
- The process of constructing a optimum diversified portfolio is highly flexible in nature.