

Phases of portfolio management

Portfolio management is a process of many activities that aimed to optimizing the investment. Five phases can be identified in the process:

- ✓ Security analysis.
- ✓ Portfolio analysis.
- ✓ Portfolio selection.
- ✓ Portfolio revision.
- ✓ Portfolio evaluation.

Each phase is essential and the success of each phases is depend on the efficiency in carrying out each phase.

Security analysis:

- Security analysis is the initial phase of the portfolio management process.
- The basic approach for investing in securities is to sell the overpriced securities is to sell the overpriced securities and purchase under priced securities
- The security analysis comprises fundamental analysis and technical analysis.

Portfolio analysis:

- A large number of portfolios can be created by using the securities from desired set of securities obtained from initial phase of security analysis.
- It involves the mathematically calculation of return and risk of each portfolio.

Portfolio selection:

- The portfolio that yield good returns at a level of risk are called as efficient portfolio.
- The set of efficient portfolio is formed and from this set of efficient portfolios, the optimal portfolio is chosen for investment.

Portfolio revision:

- Due to dynamic changes in the economy and financial markets, the attractive securities may cease to provide profitable returns.

Portfolio evaluation: a portfolio manage , by evaluating his own performance can identify source of strength or weakness. It can be viewed as a feedback and control mechanism that can make the investment management process more effective.

Objective of portfolio management

- **Stability of income:** An investor considers stability of income from his investment. He also considers the stability of purchasing power of income.
- **Capital growth:** capital appreciated has become an important investment principal. Investors seek growth stocks which provides a very large capital appreciation by way of right, bonus and appreciation the market price of a share.
- **Liquidity:** an investment is a liquid asset. It can be converted into cash with the help of a stock exchange. Investment should be liquid as well as marketable. the portfolio should contain a planned proportion of high- grade and readily salable investment.
- **Safety:** safety means protection for investment against loss under reasonably variations. In order to provide safety, a careful review of economic and industry trends is necessary.
- **Tax incentives:** investors try to minimize their tax liabilities from the investments. The portfolio manages has to keep a list of such investment avenues along with the return risk, profit, tax implications, yields and other returns. Investment programmers without considering tax implications may be costly to the investor.

The purpose of portfolio management

- Execute strategy
- Deliver business value
- Enhance decision making
- Manage organizational change

Measure of return

Portfolio performance is evaluated over a time interval. William Sharpe has suggested that the portfolio performance evaluation can be made over a time interval of at least four years with returns measured for a number of periods within the interval, typically monthly or quarterly. In practice, monthly evolution would be preferred.

In the situation, where there are neither additions nor subtractions from the portfolio during a time period, calculated of the portfolio's periodic return is simple. All that is required is the market value of the portfolio at the beginning and at the end of the period. The market value of a portfolio at a point of time is determined by adding the market values of all the securities held at that particular time.

$$(R)\text{return on portfolio} = \frac{MV_e - MV_b}{MV_b} \times 100$$

MV_e = market value of portfolio at the end of the period.

MV_b = market value of portfolio at the beginning of the period.

Risk measurement

There are several measures of risk, that are useful in evaluating performance of a portfolio. The important measure are :

- Average collection
- Return variability
- Income yield
- Beta.

Average collection is average return while return variability is the standard deviation of return. Income yield is the compounded growth of weighted income yield and beta is the slope of the regression line of portfolio return premiums against market return premiums.

Managing portfolio risk

Diversification

- Risk can be reduced through diversification.

- The risk of investing in a single risky security, such as a stock or corporate bond, is very high due to the company-specific risks. Any number of unfortunate events could impact the rate of return. In the worst possible case, the company could go bankrupt, and the investor could lose the entire value of the investment. Company-specific risk is generally referred to as unsystematic risk or nonsystematic risk. Other names are unique-risk, firm-specific risk, or diversifiable risk.
- Unsystematic risk can be eliminated by holding a broad portfolio of risky assets; e.g., many different securities in many different industries. This is easy to accomplish by owning a total market stock or bond index fund. Unsystematic risk is risk that can be "diversified away."
- The risk that remains after diversifying away unsystematic risk is systematic risk. Other names are market risk or non-diversifiable risk. A total stock or bond market fund has systematic risk. This is risk impacting an entire asset class, such as when rising real interest rates impact the entire bond market.
- In an efficient market, assets with known systematic risks will be priced lower and thereby compensate investors through higher expected returns. This expected relationship only applies to systematic risks. There is no reward for incurring unsystematic risk, and investors may therefore seek broad diversification without reducing the expected return of their portfolio.

Asset allocation

- In theory, asset allocation is the process of selecting an appropriate mixture of risk-free assets and risky assets. Optimally, the risky portion of the portfolio includes all risky assets; e.g., stocks, bonds, real estate, etc. A 30-day T-Bill is most commonly used to represent the risk-free asset.

Covariance and correlation

The goal is to hold a group of investments or securities within a portfolio potentially to reduce the risk level suffered without reducing the level of return. To measure the success of a potentially diversified portfolio, covariance and correlation are considered. Covariance measures to what degree the returns of two risky assets move in tandem. A positive covariance means that the returns of the two assets move together, whilst a negative covariance means that they move in inverse directions.

Covariance

$$COV(x, y) = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{n-1}$$

x = the independent variable

y = the dependent variable

n = number of data points in the sample

\bar{x} = the mean of the independent variable x

\bar{y} = the mean of the dependent variable y

Correlation

$$\text{Correlation} = \rho = \frac{\text{cov}(X, Y)}{\sigma_X \sigma_Y}$$

$COV(x, y)$ = covariance of the variables x and y

σ_X = standard deviation of X

σ_Y = standard deviation of Y

Finding that two stocks have a high or low covariance might not be a useful metric on its own. Covariance can tell how the stocks move together, but to determine the strength of the relationship, we need to look at the correlation. The correlation should therefore be used in conjunction with the covariance,