

Risk Measurement before VaR (Value at Risk)

VaR is a method of measuring risk.

Before the development of Value at Risk, financial institutions used several traditional methods to measure and analyze risk in portfolios. These methods mainly focused on sensitivity of assets to market changes and volatility of returns.

These techniques helped investors, banks, and companies estimate possible losses but were less comprehensive than modern VaR models.

1. Sensitivity Analysis

Sensitivity analysis measures how much the value of a portfolio changes when one market variable changes.

The variable could be: Interest rate, Exchange rate, Stock price, Commodity price etc.

In this method, a small change in the market variable is assumed, and the impact on the portfolio value is calculated.

Example, Suppose a bond portfolio worth ₹10 lakh changes by ₹50,000 if interest rates increase by 1%.

This shows the portfolio is sensitive to interest rate movements.

Its Limitations include :

It considers change in one variable at a time

It does not capture extreme market events

2. Scenario Analysis

Scenario analysis evaluates the **impact of specific economic situations** or events on a portfolio. It considers multiple variables changing simultaneously.

Examples of Scenarios include stock market crash, Global recession, Sudden rise in interest rates, Currency depreciation etc.

For instance, an analyst studies how a portfolio performs if:

Stock prices fall by 20%

Interest rates increase by 2%

Currency depreciates by 5%

This gives an idea of potential losses in extreme situations.

Its Limitations include:

The scenarios depends on assumptions.

It is difficult to predict all possible market situations.

3. Duration Analysis

Duration measures how sensitive a bond's price is, to changes in interest rates.

It indicates how much the price of a bond will change when interest rates change.

Key Idea is that -

Higher duration → higher interest rate risk

Lower duration → lower risk

For example :-

If a bond has duration 5 years, and interest rates rise by 1%, the bond price will approximately fall by 5%.

This method is mainly used by banks and financial institutions to manage interest rate risk in bond portfolios.

4. Gap Analysis

Gap analysis measures the difference between rate-sensitive assets and rate-sensitive liabilities of financial institutions.

It is mainly used by banks to manage interest rate risk.

For Example

Rate Sensitive Assets

₹50 crore

Rate Sensitive Liabilities

₹40 crore

Gap = ₹10 crore

This indicates exposure to interest rate changes.

Interpretation

Positive gap → profits rise when interest rates rise

Negative gap → profits fall when interest rates rise

5. Variance and Standard Deviation

Variance and standard deviation measures the volatility of returns of an investment.

Higher volatility means higher risk.

For Example

Standard Deviation of

Stock A

8%

Stock B

20%

Stock B is riskier because its returns fluctuate more.