FUNDAMENTAL ANALYSIS

Fundamental analysis is a method of evaluating a security in an attempt to assess its intrinsic value, by examining related economic, financial, and other qualitative and quantitative factors. Fundamental analysts study anything that can affect the security's value, including macroeconomic factors (e.g. economy and industry conditions) and microeconomic factors (e.g. financial conditions and company management).

GOAL:

The end goal of fundamental analysis is to produce a quantitative value that an investor can compare with a security's current price, thus indicating whether the security is undervalued or overvalued.

EXPLANATION:

Fundamental analysis determines the health and performance of an underlying company by looking at key numbers and economic indicators. The purpose is to identify fundamentally strong companies or industries and fundamentally weak companies or industries. Investors go long (purchasing with the expectation that the stock will rise in value) on the companies that are strong, and short (selling shares that you believe will drop in value with the expectation of repurchasing when at a lower price) the companies that are weak. This method of security analysis is considered to be the opposite of technical analysis, which forecasts the direction of prices through the analysis of historical market data, such as price and volume.

Fundamental analysis uses real, public data in the evaluation a security's value. Although most analysts use fundamental analysis to value stocks, this method of valuation can be used for just about any type of security. For example, an investor can perform fundamental analysis on a bond's value by looking at economic factors, such as interest rates and the overall state of the economy. He can also look at information about the bond issuer, such as potential changes in credit ratings.

For stocks and equity instruments, fundamental analysis uses revenues, earnings, future growth, return on equity, profit margins, and other data to determine a company's underlying value and potential for future growth. In terms of stocks, fundamental analysis focuses on the financial statements of the company being evaluated.

TECHNICAL ANALYSIS:

Technical analysis is a trading discipline employed to evaluate investments and identify trading opportunities by analyzing statistical trends gathered from trading activity, such as price movement and volume. Unlike fundamental analysts, who attempt to evaluate a security's intrinsic value, technical analysts focus on patterns of price movements, trading signals and various other analytical charting tools to evaluate a security's strength or weakness. Technical analysis was first introduced by Charles Dow and the Dow Theory in the late 1800s. Technical analysts believe past trading activity and price changes of a security can be valuable indicators of the security's future price movements.

ASSUMPTIONS:

Charles Dow released a series of editorials discussing technical analysis theory. His writings included two basic assumptions that have continued to form the framework for technical analysis trading.

1. Markets are efficient with values representing factors that influence a security's price
2. Market price movements are not purely random but move in identifiable patterns and trends that tend to repeat over time

The most popular forms of technical analysis are simple moving averages, support and resistance, trend lines

Simple moving averages are indicators that help assess the stock's trend by averaging the daily price over a fixed time period. Buy and sell signals are generated when a shorter duration moving average crosses a longer duration one.

Support and resistance utilize price history. Support is defined as areas where buyers have stepped in before, while resistance consists of the areas where sellers have impeded price advance. Practitioners look to buy at support and sell at resistance.

Trend lines are similar to support and resistance, as they give defined entry and exit points. However, they differ in that they are projections based on how the stock has traded in the past. They are often utilized for stocks moving to new highs or new lows where there is no price history.

DOW THEORY:

The **Dow theory** on stock price movement is a form of technical analysis that includes some aspects of sector rotation. The theory was derived from 255 Wall Street Journal editorials written by Charles H. Dow (1851–1902), journalist, founder and first editor of *The Wall Street Journal* and co-founder of Dow Jones and Company.

Six basic tenets of Dow theory

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1. **The market has three movements**

   (*1*) The "main movement", primary movement or major trend may last from less than a year to several years. It can be bullish or bearish.

   (*2*) The "medium swing", secondary reaction or intermediate reaction may last from ten days to three months and generally retraces from 33% to 66% of the primary price change since the previous medium swing or start of the main movement.

   (*3*) The "short swing" or minor movement varies with opinion from hours to a month or more. The three movements may be simultaneous, for instance, a daily minor movement in a bearish secondary reaction in a bullish primary movement.

2. **Market trends have three phases**

   Dow Theory asserts that major market trends are composed of three phases: an accumulation phase, a public participation (or absorption) phase, and a distribution phase. The accumulation phase (*phase 1*) is a period when investors "in the know" are actively buying (selling) stock against the general opinion of the market. During this phase, the stock price does not change much because these investors are in the minority demanding (absorbing) stock that the market at large is supplying (releasing). Eventually, the market catches on to these astute investors and a rapid price change occurs (*phase 2*). This occurs when trend followers and other technically oriented investors participate. This phase continues until rampant speculation occurs. At this point, the astute investors begin to distribute their holdings to the market (*phase 3*).

3. **The stock market discounts all news**

   Stock prices quickly incorporate new information as soon as it becomes available. Once news is released, stock prices will change to reflect this new information. On this point, Dow theory agrees with one of the premises of the efficient-market hypothesis.

4. **Stock market averages must confirm each other**

In Dow's time, the US was a growing industrial power. The US had population centers but factories were scattered throughout the country. Factories had to ship their goods to market, usually by rail. Dow's first stock averages were an index of industrial (manufacturing) companies and rail companies. To Dow, a bull market in industrials could not occur unless the railway average rallied as well, usually first. According to this logic, if manufacturers' profits are rising, it follows that they are producing more. If they produce more, then they have to ship more goods to consumers. Hence, if an investor is looking for signs of health in manufacturers, he or she should look at the performance of the companies that ship their output to market, the railroads. The two averages should be moving in the same direction. When the performance of the averages diverge, it is a warning that change is in the air.

5. **Trends are confirmed by volume**

Dow believed that volume confirmed price trends. When prices move on low volume, there could be many different explanations. An overly aggressive seller could be present for example. But when price movements are accompanied by high volume, Dow believed this represented the "true" market view. If many participants are active in a particular security, and the price moves significantly in one direction, Dow maintained that this was the direction in which the market anticipated continued movement. To him, it was a signal that a trend is developing.

6. **Trends exist until definitive signals prove that they have ended**

Dow believed that trends existed despite "market noise". Markets might temporarily move in the direction opposite to the trend, but they will soon resume the prior move. The trend should be given the benefit of the doubt during these reversals. Determining whether a reversal is the start of a new trend or a temporary movement in the current trend is not easy. Dow Theorists often disagree in this determination. Technical analysis tools attempt to clarify this but they can be interpreted differently by different investors.

VARIOUS SOURCES OF SYSTEMATIC AND UNSYSTEMATIC RISKS

A) SYSTEMATIC RISK:

1. Market risk: The price of a stock may fluctuate widely within a short span of time even though earnings remain unchanged. The causes of this phenomenon are varied, but it is mainly due to a change in investors' attitudes towards equities in general, or toward certain types or groups of securities in particular. Variability in return on most common stocks that is due to basic sweeping changes in investor expectations is referred to as market risk.

2. Interest-rate risk: The risk of variations in future market values and the size of income, caused by fluctuations in the general level of interest rates is referred to as interest-rate risk. The basic cause of interest-rate risk lies in the fact that, as the rate of interest paid on Indian government securities rises or falls, the rates of return demanded on alternative investment vehicles, such as stocks and bonds issued in the private sector, rise or fall.

3. Purchasing-power risk: Purchasing-power risk refers to the uncertainty of the purchasing power of the money to be received. In simple terms, purchasing-power risk is the impact of inflation or deflation on an investment.

Rising prices on goods and services are normally associated with what is referred to as inflation. Falling prices on goods and services are termed deflation. Both inflation and deflation are covered in the all-encompassing term purchasing-power risk.

B) Unsystematic risk

(i) **Business risk:** Business risk relates to the variability of the sales, income, profits etc., which in turn depend on the market conditions for the product mix, input supplies, strength of competitors, etc. The business risk is sometimes external to the company due to changes in government policy or strategies of competitors or unforeseen market conditions. They may be internal due to fall in production, labour problems, raw material problems or inadequate supply of electricity etc.

(ii) **Financial Risk***:* This relates to the method of financing, adopted by the company; high leverage leading to larger debt servicing problems or short-term liquidity problems due to bad debts, delayed receivables and fall in current assets or rise in current liabilities. These problems could no doubt be solved, but they may lead to fluctuations in earnings, profits and dividends to shareholders..

iii) **Default or insolvency risk***:* The borrower or issuer of securities may become insolvent or may default, or delay the payments due, such as interest instalments or principal repayments. The borrower's credit rating might have fallen suddenly and he became default prone and in its extreme form it may lead to insolvency or bankruptcies. In such cases, the investor may get no return or negative returns.

Investment alternatives in India

1. **Non marketable financial assets**: These are such financial assets which gives moderately high return but cannot be traded in market.
    * Bank Deposits
    * Post Office Schemes
    * Company FDs
    * PPF
2. **Equity shares**: These are shares of company and can be traded in secondary market. Investors get benefit by change in price of share and dividend given by companies. Equity shares represent ownership capital. As an equity shareholder, a person has an ownership stake in the company. This essentially means that the person has a residual interest in income and wealth of the company. These can be classified into following broad categories as per stock market:
    a. Blue chip shares
    b. Growth shares
    c. Income shares
    d. Cyclic shares
    e. Speculative shares
3. **Bonds**: Bonds are the instruments that are considered as a relatively safer investment avenues.
    a. G sec bonds
    b. GOI relief funds
    c. Govt. agency funds
    d. PSU Bonds
    e. RBI BOND
    f. Debenture of private sector co.
4. **Money market instrument**: By convention, the term "money market" refers to the market for short-term requirement and deployment of funds. Money market instruments are those instruments, which have a maturity period of less than one year.
    a. T-Bills
    b. Certificate of Deposit
    c. Commercial Paper

5. **Mutual Funds**- A mutual fund is a trust that pools together the savings of a number of investors who share a common financial goal. The fund manager invests this pool of money in securities, ranging from shares, debentures to money market instruments or in a mixture of equity and debt, depending upon the objective of the scheme. The different types of schemes are
    a. Balanced Funds
    b. Index Funds
    c. Sector Fund
    d. Equity Oriented Funds
6. **Life insurance**: Now-a-days life insurance is also being considered as an investment avenue. Insurance premiums represent the sacrifice and the assured sum the benefit. Under it different schemes are:
    a. Endowment assurance policy
    b. Money back policy
    c. Whole life policy
    d. Term assurance policy
7. **Real estate:** One of the most important assets in portfolio of investors is a residential house. In addition to a residential house, the more affluent investors are likely to be interested in the following types of real estate:
        * Agricultural land
        * Semi urban land
        * Farm House
8. **Precious objects**: Investors can also invest in the objects which have value. These comprises of:
    a. Gold
    b. Silver
    c. Precious stones
    d. Art objects
9. **Financial Derivatives**: These are such instruments which derive their value from some other underlying assets. It may be viewed as a side bet on the asset. The most important financial derivatives from the point of view of investors are:
    a. Options
    b. Futures

MARKET EFFICIENCY

Efficient Market Theory (EMF) definition: According to Fama, “An efficient market is a market where there are a large number of rational profit maximizers, actively competing with each trying to predict the future market and where the current information is almost freely and equally available to all participants”.

Requirements:

1. The investors must be rational and able to recognize efficient assets.
2. Information must be discussed freely and quickly across, so that all investors can react to new information.
3. Taxes are assumed to have no noticeable effect on investment policy.
4. Transaction costs such as sales commissions on securities are ignored.
5. Every investor is allotted to borrow or lend at the same rate.

In 1990, a French mathematician named Louis Bachelier published a paper suggesting that security price fluctuations were random. In 1953, Maurice Kendall in his paper reported that stock prices are wandering one. They appeared to be random and each successive change is independent of the previous one. Therefore, the movement of stock prices in a random and unpredictable manner is known as random walk of share price. The randomness in prices are determined by competitive forces and perfect information flow and are independent of the past prices.

Forms of EMH:

Market efficiency refers to the ability of financial assets to quickly adjust and reflect all information that is relevant to value in its price. The subject of market efficiency involves a thorough study of the efficient market hypothesis. Depending up on the level of information considered, there are three forms of EMH.

1. Weak Form: also known as random walk model. It says that current prices fully reflected all historical information hence any attempt to predict prices based on historical price or information is totally futile as future price changes are independent of past price changes.

Semi Strong Form: according to this form, current stock prices reflect all publicly available information such as earnings stock and cash dividends, splits, mergers and takeovers, interest rate changes, etc.

Strong form: according to the strong form, prices of securities fully reflect all available information both public and private i.e., if this form is true, prices reflect the information that is available to only selected groups like the management, financiers and stock exchange officials.

Assumptions of Random Walk Theory:

1. Market is perfect and free without trade restrictions.
2. Market absorbs all the information quickly and efficiently.
3. Information is free and costless and is quickly available to all at the same time.
4. Information is unbiased and correct
5. Market players can analyse the information quickly and the information is absorbed in the market through buy and sell signals.

Markowitz Model

Harry Markowitz wrote an article titled Portfolio Selection that was published in 1952 and is the basis of Modern Portfolio Theory. In that paper, he laid out his mathematical arguments in favor of portfolio diversification. Markowitz shared the Nobel Prize in Economics in 1990 with two other scholars “for their pioneering work in the theory of financial economics.”

Markowitz's theories emphasized the importance of portfolios, risk, the correlations between securities and diversification.

According to MPT risk can be categorized as Systematic risk and Unsystematic risk. Diversification generally does not protect against systematic risk because a drop in the entire market and economy typically affects all investments. However, diversification is designed to decrease unsystematic risk.

Single Index Model

To simplify analysis, the single-index model assumes that there is only 1 macroeconomic factor that causes the systematic risk affecting all stock returns and this factor can be represented by the rate of return on a market index. According to this model, the return of any stock can be decomposed into the expected excess return of the individual stock due to firm-specific factors, commonly denoted by its alpha coefficient (α), which is the return that exceeds the risk-free rate, the return due to macroeconomic events that affect the market, and the unexpected microeconomic events that affect only the firm. Specifically, the return of stock i is:

$$ri = \alpha i + \beta irm + ei$$

The term βirm represents the stock's return due to the movement of the market modified by the stock's beta (βi), while eirepresents the unsystematic risk of the security due to firm-specific factors.

Macroeconomic events, such as interest rates or the cost of labor, causes the systematic risk that affects the returns of all stocks, and the firm-specific events are the unexpected microeconomic events that affect the returns of specific

firms, such as the death of key people or the lowering of the firm's credit rating, that would affect the firm, but would have a negligible effect on the economy. The unsystematic risk due to firm-specific factors of a portfolio can be reduced to zero by diversification.

The index model is based on the following:

- Most stocks have a positive covariance because they all respond similarly to macroeconomic factors.
- However, some firms are more sensitive to these factors than others, and this firm-specific variance is typically denoted by its beta (β), which measures its variance compared to the market for one or more economic factors.
- Covariances among securities result from differing responses to macroeconomic factors. Hence, the covariance (σ2) of each stock can be found by multiplying their betas by the market variance:

$$Cov(Ri, Rk) = \beta i \beta k \sigma 2.$$

This last equation greatly reduces the computations, since it eliminates the need to calculate the covariance of the securities within a portfolio using historical returns and the covariance of each possible pair of securities in the portfolio. With this equation, only the betas of the individual securities and the market variance need to be estimated to calculate covariance. Hence, the index model greatly reduces the number of calculations that would otherwise have to be made for a large portfolio of thousands of securities.

Capital Asset Pricing Model

A model that describes the relationship between risk and expected return and that is used in the pricing of risky securities.

The general idea behind CAPM is that investors need to be compensated in two ways: time value of money and risk. The time value of money is represented by the risk-free (rf) rate in the formula and compensates the investors for placing money in any investment over a period of time. The other half of the formula represents risk and calculates the amount of compensation the investor needs for taking on additional risk. This is calculated by taking a risk measure (beta) that compares the returns of the asset to the market over a period of time and to the market premium (Rm-rf).

Assumptions of CAPM:

1. All investors aim to maximize economic utilities (Asset quantities are given and fixed).
2. All investors are rational and risk-averse.
3. Investors are broadly diversified across a range of investments.
4. Investors are price takers, i.e., they cannot influence prices.

5. All investors can lend and borrow unlimited amounts under the risk free rate of interest.
6. There are no transaction or taxation costs.
7. Investors deal with securities that are all highly divisible into small parcels (All assets are perfectly divisible and liquid).
8. All Investors have homogeneous expectations.
9. Information is available at the same time to all investors.

Capital Market Line:

A line used in the capital asset pricing model to illustrate the rates of return for efficient portfolios depending on the risk-free rate of return and the level of risk (standard deviation) for a particular portfolio.

The CML is derived by drawing a tangent line from the intercept point on the efficient frontier to the point where the expected return equals the risk-free rate of return.

The CML is considered to be superior to the efficient frontier since it takes into account the inclusion of a risk-free asset in the portfolio. The capital asset pricing model (CAPM) demonstrates that the market portfolio is essentially the efficient frontier. This is achieved visually through the security market line (SML).

Security Market Line:

A line that graphs the systematic, or market, risk versus return of the whole market at a certain time and shows all risky marketable securities.

The SML essentially graphs the results from the capital asset pricing model (CAPM) formula. The x-axis represents the risk (beta), and the y-axis represents the expected return. The market risk premium is determined from the slope of the SML.

The security market line is a useful tool in determining whether an asset being considered for a portfolio offers a reasonable expected return for risk. Individual securities are plotted on the SML graph. If the security's risk versus expected return is plotted above the SML, it is undervalued because the investor can expect a greater return for the inherent risk. A security plotted below the SML is overvalued because the investor would be accepting less return for the amount of risk assumed.

Arbitrage Pricing theory:

Introduction: an alternative model of asset pricing was developed by Stephen Ross and is known as Arbitrage Pricing Theory (APT). According to the theory, the returns of the securities are influenced by a number of macro-

economic factors such as growth rate of industrial production, rate of inflation, spread between low grade and high grade bonds.

Arbitrage Pricing for One Risk Factor & Two Risk Factor: the one factor model is equivalent to the CAPM, __ is equal to the risk free rate (Rf). However, the assumptions of the two models differ. Both models assume investors:

1. prefer more wealth to less. 2. are risk-averse
3. Have homogeneous expectations 4. That capital markets are perfect.

However, the APT, unlike the CAPM, does not assume:

1. A one period horizon. 2. Returns are normally distributed
3.A particular type of utility function 4. A market portfolio or
5. That the investor can borrow or lend at the risk free return.

Assumptions of APT:

1. The investors have homogenous expectations.
2. The investors are risk averse and utility maximizers
3. Perfect competition prevails in the market and there is no transaction cost.

Advantages of APT:

APT in Passive Management: multi index model can greatly improve the passive management of portfolios. Multi-index model can be used to track an index in a better way or to construct an appropriate passive portfolio for a client.

APT and Active Management: another application of APT is in identifying mispriced securities. This is similar to the CAPM model. Apt is used to estimate the required return on a stock based on the various return generating factors and sensitivity of the security to these factors. Along with the required rate of return, expected return on the stock is also estimated.