Security Analysis

Lesson 18

KEY CONCEPTS

■ Investment ■ Speculation ■ Security Analysis ■ Technical Analysis ■ Risk and its types

Learning Objectives

To understand:

- Concept of investment a security analysis
- Risk and its types
- Approaches to valuation security
- Fundamental analysis
- Technical analysis
- Efficient-Market Theory

Lesson Outline

INTRODUCTION

"An Investment is the current commitment of money or other resources in the expectation of reaping future benefits." (Zvi Bodie, 2016). Investment means to forego present consumption for the increased consumption resource available in the future. It can be in any form, assets of all type and kind be it jewellery, commodity, real estate etc. An investor can buy a share of a company in anticipation of getting good returns in future. In this section of the book, we are interested in the Financial Assets or securities like equity shares, bonds and debentures etc. At this point, reader should understand that the financial assets are different from real assets. While financial assets are the paper claim representing an indirect claim to real assets in form of debt or equity commitments, the real assets are land and building, machines, etc., which are used to produce goods and services. Therefore, a security is understood to be a debt or equity instrument issued by a firm in lieu of the funds raised by it to meet its long term and short term requirements. Among the many properties that distinguish real from financial assets are liquidity and marketability. These features make the financial assets more attractive for investors as they are able to liquidate their investments easily in ready and active markets.

The decision of the investor is confronted with many issues, like- in which asset class to invest; shares, bonds, bullion etc. The investor must decide the time horizon for which he/she needs to invest and balance the combination of his/her expected return to the risk they are ready to face. These are some of the issues which any investor will face. In this chapter we shall describe the term securities generally and discuss the prevalent options available in the Indian Securities market.

WHAT ARE SECURITIES

Securities may be defined as instruments issued by seekers of funds in the investment market to the providers of funds in lieu of funds.

These instruments *prima facie* provide evidence of ownership to the holder of the instrument. The owner is entitled to receive all the benefits due on the instrument and to retrieve his investment at the time of redemption. Securities can broadly be divided into two categories – Debt Securities and Equity Securities. However, Section 2(h) of Securities Contract (Regulation) Act, 1956, defines securities as under:

Securities include –

(i) shares, scrips, stocks, bonds, debentures, debenture stock or other marketable securities of a like nature in or of any incorporated company or other body corporate.

(ia) derivative.

(ib) units or any other instrument issued by any collective investment scheme to the Investors in such schemes.

(ic) security receipt as defined in clause (zg) of Section 2 of the Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002.

(id) units or any other such instrument issued to the investors under any mutual fund scheme.

(ii) Government securities.

(iia) such other instruments as may be declared by the Central Government to be securities and,

(iii) rights or interests in securities.

INVESTMENT

Investment is the employment of funds on assets with the aim of earning income or capital appreciation. Investment has two attributes namely time and risk. Present consumption is sacrificed to get a return in the

future. The sacrifice that has to be borne is certain but the return in the future may be uncertain. This attribute of investment indicates the risk factor. The risk is undertaken with a view to reap some return from the investment.

The investor makes a comparison of the returns available from each avenue of investment, the element of risk involved in it and then makes the investment decision that he perceives to be the best having regard to the time frame of the investment and his own risk profile.

Any investment decision will be influenced by three objectives – security, liquidity and yield. A best investment decision will be one, which has the best possible compromise between these three objectives.

- Security
- Liquidity
- Yield

A best investment decision will be one, which has the best possible compromise between these three objectives. When selecting where to invest our funds, we have to analyze and manage following three objectives.

(i) **Security:** Central to any investment objective is the certainty in recovery of the principal. One can afford to lose the returns at any given point of time, but s/he can ill afford to lose the very principal itself. By identifying the importance of security, we will be able to identify and select the instrument that meets this criterion. For example, when compared with corporate bonds, we can vouch the safety of return of investment in treasury bonds as we have more faith in governments than in corporations. Hence, treasury bonds are highly secured instruments. The safest investments are usually found in the money market and include such securities as Treasury bills (T-bills), certificates of deposit (CD), commercial paper or bankers' acceptance slips; or in the fixed income (bond) market in the form of municipal and other government bonds, and in corporate bonds.

(ii) **Liquidity :** Because we may have to convert our investment back to cash or funds to meet our unexpected demands and needs, our investment should be highly liquid. They should be en cashable at short notice, without loss and without any difficulty. If they cannot come to our rescue, we may have to borrow or raise funds externally at high cost and at unfavorable terms and conditions. Such liquidity can be possible only in the case of investment, which has always-ready market and willing buyers and sellers. Such instruments of investment are called highly liquid investment. Common stock is often considered the most liquid of investments, since it can usually be sold within a day or two of the decision to sell. Bonds can also be fairly marketable, but some bonds are highly illiquid, or nontradable, possessing a fixed term. Similarly, money market instruments may only be redeemable at the precise date at which the fixed term ends. If an investor seeks liquidity, money market assets and non-tradable bonds aren't likely to be held in his or her portfolio.

(iii) **Yield:** Yield is best described as the net return out of any investment. Hence given the level or kind of security and liquidity of the investment, the appropriate yield should encourage the investor to go for the investment. If the yield is low compared to the expectation of the investor, s/he may prefer to avoid such investment and keep the funds in the bank account or in worst case, in cash form in lockers. Hence yield is the attraction for any investment and normally deciding the right yield is the key to any investment.

INVESTMENT VS. SPECULATION

According to Benjamin Graham "An investment operation is one which, upon thorough analysis, promises safety of principal and an adequate return. Operations not meeting these requirements are speculative."

Thus investment differs from speculation. Speculation also involves deployment of funds but it is not backed

by a conscious analysis of pros and cons. Mostly it is a spur of the moment activity that is promoted and supported by half-baked information and rumours. Speculative deployment of funds is generally prevalent in the secondary equity market. What attracts people to speculation is a rate of return that is abnormally higher than the prevailing market rates. The balancing of risk and return nevertheless operates in speculative activity also and as such the risk element in speculation is very high. Very broadly, the characteristics of an investor differ from the speculator as follows:

BASIS FOR COMPARISON	***INVESTMENT***	***SPECULATION***
Meaning	The purchase of an asset with the hope of getting returns is calledinvestment.	Speculation is an act of conducting a risky financial transaction, in the hopeof substantial profit.
Basis for decision	Fundamental factors, i.e. performanceof the company.	Hearsay, technical charts and marketpsychology.
Time horizon	Long term	Short term
Risk involved	Moderate risk	High risk
Intent to profit	Changes in value	Changes in prices
Expected rate of return	Modest rate of return	High rate of return
Funds	An investor uses his own funds.	A speculator uses borrowed funds.
Income	Stable	Uncertain and Erratic
Behavior of participants	Conservative and Cautious	Daring and Careless

INVESTMENT VS. GAMBLING

Investment differs from gambling and betting also. Both gambling and betting are games of chance in which return is dependent upon a particular event happening. Here also, there is no place for research-based activity. The returns in gambling are high and known to the parties in advance. Gambling is different from Investment in the following respects:

BASIC FOR COMPARISON	***INVESTMENT***	***GAMBLING***
Planning Horizon	Longer Planning Horizon	Short Planning Horizon
Basis for Decisions	Scientific Analysis of Intrinsic worthof the security	Based on tips and rumors
Nature	Planned activity	Unplanned activity
Risk	Commercial Risk	Artificial Risk
Return Expectation	Risk-return trade-off determines return	Negative returns are expected
Motive	Safety of principal and stability of returns	Entertainment while earning

To say that investors like return and dislike risk is, however, simplistic. To facilitate our job of analyzing securities and portfolios within a risk return context, we must begin with a clear understanding of what risk and return are, what creates them and how they should be measured.

SECURITY ANALYSIS

Security analysis is the first part of investment decision process involving the valuation and analysis of individual securities. Security Analysis is primarily concerned with the analysis of a security with a view to determine the value of the security, so that appropriate decisions may be made based on such valuation as compared with the value placed on the security in the market.

Two basic approaches of security analysis are fundamental analysis and technical analysis.

Fundamental Analysis can be segregated into economic analysis, industry analysis and company analysis

Fundamental analysis is a three level systematic process that analyse the overall external and internal environment of the company before placing a value on its shares. The three levels at which the analysis is carried out are the following:

(a) Analysis of the economy

(b) Industry Level Analysis

(c) Company Analysis

We shall describe the analytical process at all these levels in details hereunder:

Analysis of the economy

Performance of a company is intimately related to the overall economic environment of the country because demand for products and services of the company would under normal circumstances be directly related to growth of the country's economy. If the country has an improving GDP growth rate, controlled inflation and increasing investment activity then chances are that the valuation of securities shall be liberal. The capital market is said to be in a bullish phase with share values shooting up across the board. As the economy is growing, the analyst expects almost every industry to do well.

On the other hand, if the GDP growth rate slackens, inflation is out of control and investment activity is stagnant or declining, the investor or the analyst will expect the performance of industries to slow down. Under such circumstances, valuation of securities tends to be conservative. The capital market enters a bearish phase and share values decline across to board.

While undertaking the analysis of the economy, the following macro-economic factors are commonly used.

i) **Gross Domestic Product:** Gross Domestic Product (GDP) indicates the rate of growth of the economy. GDP represents the aggregate value of the goods and services produced in the economy. GDP consists of personal consumption expenditure, gross private domestic investment and government expenditure on goods and services and net export of goods and services. As mentioned above, whenever the GDP grows, it indicates economic growth and higher return for investors.

ii) **Savings and Investment:** It is obvious that growth demands investment which in turn needs substantial amount of domestic savings. Stock market is a channel through which the savings of the investors are made available to corporate houses. Savings are distributed over different assets such as equity shares, deposits, mutual fund units, real estate and bullion.

iii) **Inflation :** Along with the growth rate of GDP, if the inflation rate also increases, then the real rate of

growth of would be very less. The demand in the consumer product industry is significantly affected. The industries which come under the government price control policy may lose the market. It is to be noted that mild level of inflation is good for the stock market and high rate of inflation is detrimental to the stock market.

iii) **Interest rates:** The interest rate affects the cost of financing to the firms. A decrease in interest rate implies lower cost of finance for firms and more profitability. More money is available at a lower interest rate for the brokers who are doing business with borrowed money. Availability of funds at low interest rates fosters speculation and rise in the price of shares.

iv) **Budget:** The Union Budget provides a detailed account of the government revenues and expenditures. A deficit budget may lead to high rate of inflation and adversely impact the cost of production. Surplus budgets may result in deflation. Hence, balance budget is highly favourable to the stock market.

v) **Tax structure:** Tax concessions and incentives given to certain industries encourages investment in that particular industry. Tax reliefs provided to savings encourage savings.

vi) **Other factors:** Other factors include the balance of payment, monsoon and agriculture, infrastructure facilities and demographic factors.

Industry Level Analysis

Industry level analysis focuses on a particular industry rather than on the broader economy. In this analysis, the analyst has to look for the composition of the industry, its criticality vis-à-vis the national economy, its position along the industrial life cycle, entry and exit barriers. All these factors have a bearing upon the performance of the company.

Industry is a combination or group of units whose end products and services are similar. Having a common market, the participants in the industry group face similar problems and opportunities. To the extent that an industry loses or gains from certain happenings, the performance of the participants is sure to be similarly impacted. These happenings may be technological changes, shifts in consumer preferences, availability of substitutes etc. These changes also drive the life cycle of the industry.

The industry life cycle or the industry growth cycle can be divided into three major stages-pioneering stage, expansion stage and stagnation stage. The pioneering stage is related to sunrise status of the industry. It is the stage when technological development takes places. The products have been newly introduced in the market and they gain ready acceptance. The pioneering units in the industry make extraordinary profits and thus attract competition. As competition increases profitability in the industry comes under strain and less efficient firms are forced out of the market. At the end of the pioneering stage, selected leading companies remain in the industry.

In the expansion stage of the growth cycle the demand for the products increases but at a lower rate. There is less volatility in prices and production. Capital is easily available in plenty for these units. Due to retention of profits, internal accruals increase.

At the stagnation stage, the growth rate initially slows down, then stagnates and ultimately turns negative. There is no product innovation. External capital is hard to come by. Even the internal capital takes flight. This stage of the industry is most valuable during times of slow down in national economy.

Company Analysis

Armed with the economic and industry forecasts, the analyst looks at the company specific information. Company information is generated internally and externally. The principle source of internal information about a company is its financial statements. Quarterly and annual reports including the income statement, the

balance sheet and cash flows must be screened to assure that the statements are correct, complete, consistent, and comparable. Many popular and widely circulated sources of information about the companies emanate from outside, or external sources. These sources provide supplements to company-generated information by overcoming some of its bias, such as public pronouncements by its officers. External information sources also provide certain kinds of information not found in the materials made available by companies themselves. There are traditional and modern techniques of company analysis.

Among the traditional techniques are forecasting expected dividends and earnings using price-earning ratios which help us to determine whether a stock is fairly valued at a point in time. Such approaches allow us to evaluate an equity share for a short term horizon. Moreover, an approach combining the dividend discount model (with variable growth rates) and the concept of systematic risk can also be helpful in evaluating a stock for a longer term holding period. Among the modern methods are regression analysis, and the related tools of trend and correlation analysis, decision tree analysis and simulation. Modern methods have strengths of the traditional methods while attempting to overcoming their shortcomings.

Fundamental Analysis Tools: Although the raw data of the Financial Statement has some useful information, much more can be understood about the value of a stock by applying a variety of tools to the financial data.

1. Earnings per Share – EPS
2. Price to Earnings Ratio – P/E
3. Projected Earnings Growth – PEG
4. Price to Sales – P/S
5. Price to Book – P/B
6. Dividend Yield
7. Dividend Payout Ratio
8. Book value per share
9. Return on Equity

At this juncture, it is imperative to understand various Ratios, Comparative Financial Statements, Trend Analysis, Common Size Statements, Fund Flow Analysis and Cash Flow Analysis

A. Ratio Analysis

Ratio is a relationship between two figures expressed mathematically. Financial ratio provides numerical relationship between two relevant financial data. Financial ratios are calculated from the balance sheet and profit and loss account.

Financial ratios may be divided into six groups

- Liquidity Ratios
- Turnover Ratios
- Leverage Ratios
- Profit Margin Ratios
- Coverage Ratios
- Valuation Ratios

a) *Liquidity Ratios*: Liquidity means the ability of the firm to meet its short term obligations. Current ratio and

acid test ratio are the most popular ratios used to analyse the liquidity. The liquidity ratio indicates the liquidity in a rough fashion and the adequacy of the working capital.

1. **Current Ratio:** The current ratio is a liquidity ratio that measures a company's ability to pay short-term obligations or those due within one year.

   = Current Assets / Current Liabilities

2. **Acid Test Ratio:** The acid-test ratio (ATR), also commonly known as the quick ratio, measures the liquidity of a company by calculating how well current assets can cover current liabilities. The quick ratio uses only the most liquid current assets that can be converted to cash within 90 days or less.

   = Current Assets – Inventories / Current Liabilities

b) *Turnover Ratios*: The turnover ratios show how well the assets are used and the extent of excess inventory, if any. These ratios are also known as activity ratios or asset management ratios. Commonly calculated ratios are sales to current assets, sales to fixed assets, sales to inventory, receivable to sales and total assets to turnover. Sales to current assets ratio shows the utilisation of current assets. Various turnover ratios are as under:

1. **Inventory Turnover Ratio:** Inventory turnover is the rate that inventory stock is sold, or used, and replaced. The inventory turnover ratio is calculated by dividing the cost of goods by average inventory for the same period. A higher ratio tends to point to strong sales and a lower one to weak sales.

   = Net Sales / Inventory or

   Cost of Goods Sold / Average Inventory.

2. **Receivables Turnover Ratio:** The receivables turnover ratio measures the efficiency with which a company is able to collect on its receivables or the credit it extends to customers. The ratio also measures how many times a company's receivables are converted to cash in a certain period of time.

   = Net Credit Sales / Average Accounts Receivable

3. **Capital Employed Turnover Ratio:** The capital employed turnover ratio indicates the efficiency with which a company utilizes its capital employed with reference to sales.

   = Net Sales / Average Capital Employed

4. **Working Capital Turnover Ratio:** Working capital turnover ratio is the ratio between the net revenue or turnover of a business and its working capital.

   = Net Sales / Working Capital

5. **Asset Turnover Ratio:** Asset turnover ratio is the ratio between the value of a company's sales or revenues and the value of its assets. It is an indicator of the efficiency with which a company is deploying its assets to produce the revenue. Thus, asset turnover ratio can be a determinant of a company's performance.

   = Net Sales / Average Total Assets

c) *Leverage Ratios*: The investors are generally interested to find out the debt portion of the capital. The debt affects the dividend payment because of the outflow of profit in the form of interest. High leverage indicates significance reliance on external debt financing sources. Low leverage signifies operations are mostly funded with internally generated cash (retained earnings).

The financial leverage affects the risk and return aspects of holding the shares. In general, increased amounts of leverage in the capital structure equates to more financial risk, since the company incurs greater interest

expense and mandatory debt amortization as well as principal repayments coming up in the future. Various leverage ratios are as under:

1. **Debt-to-Assets Ratio:** The debt-to-assets ratio compares a company's total debt to its assets, with a higher value meaning that the company has purchased the majority of its assets using debt.

   Debt-to-Assets Ratio = Total Debt / Total Assets

2. **Debt-to-Equity Ratio (D/E):** The debt-to-equity ratio compares a company's debt to the shareholders' equity, with a high ratio suggesting the company's operations have been financed with more debt.

   Debt-to-Equity Ratio (D/E) = Total Debt / Total Equity

3. **Debt-to-Total Capitalization:** The debt-to-capital ratio compares the total debt to the sum of all capital sources, with the purpose of measuring the percentage of the total capital structure attributable to debt.

   Debt-to-Total Capitalization = Total Debt / (Debt + Equity + Minority Interest + Preferred Stock)

4. **Net Debt-to-Total Capitalization:** The inherent assumption in the net debt-to-capital ratio is that the cash on the B/S can be used to help pay down existing debt – thus the total debt amount is adjusted to account for the available cash balance.

   Net Debt-to-Capital = (Total Debt – Cash) / (Debt + Equity + Minority Interest + Preferred Stock – Cash)

5. **Operating Leverage Ratio:** The degree of operating leverage (DOL) is a financial ratio that measures the sensitivity of a company's operating income to its sales. This financial metric shows how a change in the company's sales will affect its operating income.

   DOL = (Sales – Variable Costs) / Profit

   Where Profit can be calculated using the following formula,

   Profit= Sales – Variable Costs – Fixed Costs

6. **Financial Leverage Ratio:** Just as operating leverage results from the existence of operating expenses in the enterprise's income stream, financial leverage results from the presence of fixed financial charges in the firm's income stream. Financial leverage is the use of debt to buy more assets. Leverage is employed to increase the return on equity. However, an excessive amount of financial leverage increases the risk of failure, since it becomes more difficult to repay debt.

   The degree of financial leverage (DFL) is a leverage ratio that measures the sensitivity of a company's earnings per share to fluctuations in its operating income, as a result of changes in its capital structure. This ratio indicates that the higher the degree of financial leverage, the more volatile earnings will be.

   DFL = (EBIT) / (EBT)

d) *Profitability Ratios*: Profitability ratios are a class of financial metrics that are used to assess a business's ability to generate earnings relative to its revenue, operating costs, balance sheet assets, or shareholders' equity over time, using data from a specific point in time.

Profitability ratios can be compared with efficiency ratios, which consider how well a company uses its assets internally to generate income (as opposed to after-cost profits). Profitability ratios assess a company's ability to earn profits from its sales or operations, balance sheet assets, or shareholders' equity.

Profitability ratios indicate how efficiently a company generates profit and value for shareholders. Higher ratio results are often more favourable, but these ratios provide much more information when compared to results of similar companies, the company's own historical performance, or the industry average.

The following are covered under the profitability ratios:

1. **Gross Profit Margin**: The Gross Margin Ratio, also known as the gross profit margin ratio, is a profitability ratio that compares the gross margin of a company to its revenue. It shows how much profit a company makes after paying off its Cost of Goods Sold (COGS).

   Gross Profit Margin = Gross Profit / Net Sales * 100

   Where,

   Gross Profit = Net Sales – Cost of Goods Sold

   Net Sales = Total Sales – Discounts – Allowances – Sales Returns

2. **Operating Profit Margin:** Operating Profit Margin helps measure the company's ability to maintain operating expenses to generate profit before interest expense and tax deduction. In other words, the revenue that remains after costs is deducted from net sales.

   A higher ratio indicates that the company is well equipped to pay its fixed costs, interest obligations, handle economic slowdowns and also offer lower prices than its competitors at lower margins. Moreover, the company management most frequently uses this to improve profitability by managing its costs.

   Operating Profit Margin Ratio = Operating Profit / Net Sales * 100

   Where,

   Operating Profit = Gross Profit – Operating Expenses – Depreciation and Amortisation

   Net Sales = Total Sales – Discounts – Allowances – Sales Returns

3. **Net Profit Margin:** The net profit margin, or simply net margin, measures how much net income or profit is generated as a percentage of revenue. It is the ratio of net profits to revenues for a company or business segment. Net profit margin is typically expressed as a percentage but can also be represented in decimal form. The net profit margin illustrates how much of each dollar /rupee in revenue collected by a company translates into profit.

   Net Profit Margin Ratio = Net Income / Net Sales * 100

   Where,

   Net Income = Gross Profit – All Expenses – Interest – Taxes

   Net Sales = Total Sales – Discounts – Allowances – Sales Returns

4. **Return on Equity (ROE):** ROE measures how well a company can use its shareholders' money to generate profits. Also, it indicates the returns on the sum of money the investors have invested in the company.

   Furthermore, ROE is usually watched by investors and analysts. Moreover, a higher ROE ratio can be one of the reasons to buy a company's stock. Companies with a high return on equity can generate cash internally, and thus they will be less dependent on debt financing.

   Return on Equity = Net Profit after Taxes / Shareholder's Equity x 100

   Where,

   Shareholder's Equity = Equity Share Capital

5. **Return on Assets (ROA):** Return on Assets (ROA) measures how well a company uses its assets to generate profits. In other words, it focuses on how much profit it generates on every rupee invested.

Also, it measures the asset intensity of the company. Thus, a lower ROA indicates a more asset-intensive company.

On the contrary, a higher ROA indicates more profitability against the company's number of assets to operate. Moreover, companies with higher asset intensity must invest a significant amount in machinery and equipment to generate income. For example – telecommunication, car manufacturers, railroads, etc.

Return on Assets = Net Profit after Taxes / Total Assets x 100

Where,

Total assets = All the assets on the balance sheet

6. **Return on Capital Employed (ROCE):** Return on Capital Employed (ROCE) measures the company's overall return against the overall investment of both shareholders and bondholders. This ratio is very similar to ROE, but it is more comprehensive as it includes the returns generated from bondholders capital investments.

   Return on Capital Employed (ROCE) = EBIT / Capital Employed

   Where,

   EBIT (Earnings Before Interest & Taxes) = Net Profit Before Interest and Taxes

   Capital Employed = Total Assets – Current Liabilities

e) *Coverage Ratios*: A coverage ratio, broadly, is a metric intended to measure a company's ability to service its debt and meet its financial obligations, such as interest payments or dividends. The higher the coverage ratio, the easier it should be to make interest payments on its debt or pay dividends.

The most common coverage ratios are:

1. **Interest coverage ratio:** The ability of a company to pay the interest expense (only) on its debt.

   = Operating Income / Interest Expense.

2. **Debt service coverage ratio**: The ability of a company to pay all debt obligations, including repayment of principal and interest.

   = Operating Income / Total Debt Service

3. **Cash coverage ratio:** The ability of a company to pay interest expense with its cash balance.

   = Total Cash / Interest Expense

4. **Asset coverage ratio:** The ability of a company to repay its debt obligations with its assets.

   = (Total Assets – Intangible Assets) – (Current Liabilities- Short-term Debts) / Interest Expense

f) *Valuation Ratios or Market Value Ratios*: Valuation ratios, or market value ratios, are measurements of how appropriately shares in a company are valued and what type of return an investor may get. By calculating the market value, a potential investor can see if the shares are overvalued, undervalued, or at a fair price.

1. **Price- to -Earnings Ratio:** Price-to-earnings ratio (P/E) looks at the relationship between a company's stock price and its earnings. The P/E ratio gives investors an idea of what the market is willing to pay for the company's earnings. The ratio is determined by dividing a company's current share price by its earnings per share.

   Companies with a high Price Earnings Ratio are often considered to be growth stocks. This indicates a

positive future performance, and investors have higher expectations for future earnings growth and are willing to pay more for them.

Companies with a low Price Earnings Ratio are often considered to be value stocks. It means they are undervalued because their stock prices trade lower relative to their fundamentals. This mispricing will be a great bargain and will prompt investors to buy the stock before the market corrects it.

P/E = Stock Price Per Share / Earnings Per Share

or

P/E = Market Capitalization / Total Net Earnings

or

Justified P/E = Dividend Payout Ratio / R – G

where;

R = Required Rate of Return

G = Sustainable Growth Rate

2. **Price-to-Book Value Ratio:** Price-to-book value (P/B) is a measurement that looks at the value the market places on the book value of the company. It is calculated by taking the current price per share and dividing by the book value per share. The book value of a company is the difference between the balance sheet assets and balance sheet liabilities. A ratio over 1 generally implies that the market is willing to pay more than the equity per share, while a ratio under 1 implies that the market is willing to pay less.

   The P/B ratio reflects the value that market participants attach to a company's equity relative to the book value of its equity. A stock's market value is a forward-looking metric that reflects a company's future cash flows. The book value of equity is an accounting measure based on the historic cost principle and reflects past issuances of equity, augmented by any profits or losses, and reduced by dividends and share buybacks.

$$\text{P/B Ratio} = \frac{\text{Market Price per Share}}{\text{Book Value per Share}}$$

3. **Price-to-Sales Ratio**: The price-to-sales ratio (P/S) shows how much the market values every dollar of the company's sales. To calculate it, take the company's market capitalization and divide it by the company's total sales over the past 12 months. A company's market cap is the number of shares issued multiplied by the share price. The P/S ratio can be used in place of the P/E ratio in situations where the company has a net loss.

   One of the advantages of using the P/S ratio is that sales are much harder to manipulate than earnings. Since a company's sales are generally more stable than its earnings level, any large changes in the P/S ratio are often more likely to indicate a departure from the intrinsic value of the company (either up or down).

$$\text{P/S Ratio} = \frac{\text{MVS}}{\text{SPS}}$$

Where:

MVS = Market Value per Share

SPS = Sales per Share

4. **Price-to-Cash Flow Ratio**: Price-to-cash flow ratio (P/CF) evaluates the price of a company's stock relative to how much cash flow the company generates. It is calculated by dividing the company's market cap by its operating cash flow in the most recent 12 months. It can also be calculated by dividing the per-share stock price by the per-share operating cash flow. P/CF ratio is an alternative method to P/E ratio.

   Many investors prefer to use a P/CF metric because it is considered harder to manipulate cash tallies than it would be to massage earnings reports under generally accepted accounting principles, which could make the cash-based benchmark a more reliable indicator.

$$\text{Price-to-Cash Flow Ratio} = \frac{\text{Share Price}}{\text{Operating Cash Flow per Share}}$$

5. **Price/earnings-to-growth (PEG):** Price/earnings-to-growth ratio is the relationship between the P/E ratio and the projected earnings growth of a company. It is calculated by dividing the P/E ratio by the earnings-per-share growth. For example, if a company's P/E ratio is 16.5 and its earnings-per-share growth over the next 3 years is expected to be 10.8%, its PEG ratio would be 1.5.

   A PEG of 1 or less is typically taken to indicate that the company is undervalued. A PEG of more than 1 is typically taken to indicate that the company is overvalued. To get a clearer picture of value, the PEG of the company should also be compared with the PEG of the market and with the industry that the company competes in.

$$\text{PEG Ratio} = \frac{\text{Price / EPS}}{\text{EPS Growth}}$$

   Where:

   EPS = The earnings per share.

(Note: For more details on ratio analysis, please refer to Lesson 8- Financial Statement Analysis covered under the Corporate Accounting portion).

B. Comparative Financial Statements

In the comparative financial statements balance sheet figures are provided for more than one year. The comparative financial statement provides time perspective to the balance sheet figures. The annual data are compared with similar data of previous years, either in absolute terms or in percentages.

Example:

From the following Balance Sheet, prepare Comparative Balance Sheet of Beta Ltd.:

Particulars	*Note No.*	*31st March, 2022 (₹)*	*31st March, 2021 (1)*
I. EQUITY AND LIABILITIES			
1. Shareholder's Funds			
(a) Share Capital		3,50,000	3,00,000
2. Non-Current Liabilities			
Long-term Borrowings		1,00,000	2,00,000

3. Current Liabilities :			
Trade Payables		1,50,000	1,00,000
Total		6,00,000	6,00,000
II. ASSETS			
1. Non-Current Assets			
Fixed Assets (Tangible)		4,00,000	3,00,000
2. Current Assets			
Trade Receivables		2,00,000	3,00,000
Total		6,00,000	6,00,000

Solution:

In the books of Sun Ltd.

Comparative Balance Sheet
as at March 31, 2018 and 2019

Particulars	*2021 (₹)*	*2022 (₹)*	*Absolute Change (₹)*	*Percentage Change (%)*
I. Equity and Liabilities				
1. **Shareholders' Funds**				
a. Share Capital	3,00,000	3,50,000	50,000	16.67
Shareholders' Fund	3,00,000	3,50,000	50,000	16.67
2. **Non-Current Liabilities**				
a. Long-term Borrowings	2,00,000	1,00,000	(1,00,000)	(50.00)
3. **Current Liabilities**				
a. Trade Payables	1,00,000	1,50,000	50,000	50.00
Total	6,00,000	6,00,000	–	–
II. Assets				
1. **Non-Current Assets**				
a. Fixed Assets (Tangible)	3,00,000	4,00,000	1,00,000	33.33
2. **Current Assets**				
a. Trade Receivables	3,00,000	2,00,000	(1,00,000)	(33.33)
Total	**6,00,000**	**6,00,000**	**–**	**–**

C. Trend Analysis

In trend analysis percentages are calculated with a base year. This would provide insight into the growth or decline of the sale or profit over the years. Sometimes sales may be increasing continuously, and the inventories may also be rising. This would indicate the loss of market share of the particular company's product. Likewise sales may have an increasing trend but profits may remain the same. Here the investor has to look into the cost and management efficiency of the company.

D. Common size statement

A common size financial statement displays line items as a percentage of one selected or common figure. Creating common size financial statements makes it easier to analyze a company over time and compare it with its peers. Using common size financial statements helps you spot trends that a raw financial statement may not uncover.

All three of the primary financial statements can be put into a common size format. Financial statements in dollar amounts can easily be converted to common size statements using a spreadsheet. Below is an overview of each financial statement and a more detailed summary of the benefits and drawbacks that such an analysis can provide to you.

Balance Sheet Analysis

The common figure for a common size balance sheet analysis is total assets. Based on the accounting equation, this also equals total liabilities and shareholders' equity, making either term interchangeable in the analysis. It is also possible to use total liabilities to indicate where a company's obligations lie and whether it is being conservative or risky in managing its debts.

The common size strategy from a balance sheet perspective lends insight into a firm's capital structure and how it compares to its rivals. You can also look to determine an optimal capital structure for a given industry and compare it to the firm being analysed. Then, you can conclude whether the debt level is too high, excess cash is being retained on the balance sheet, or inventories are growing too high. The goodwill level on a balance sheet also helps indicate the extent to which a company has relied on acquisitions for growth.

Analysing the Income Statement

The common figure for an income statement is total top-line sales. This is actually the same analysis as calculating a company's margins. For instance, a net profit margin is simply net income divided by sales, which also happens to be a common size analysis.

The same goes for calculating gross and operating margins. The common size method is appealing for research-intensive companies, for example, because they tend to focus on research and development (R&D) and what it represents as a percent of total sales.

Taking the example of Apple Inc. to understand the concept and see the trend in the financials of the last three years.

All Amount in Millions

Period	***2018***	***2017***	***2016***	***2018***	***2017***	***2016***
Total Revenue	$2,65,595	$2,29,234	$2,15,639	100.00%	100.00%	100.00%
Cost of Revenue	$1,63,756	$1,41,048	$1,31,376	61.70%	61.50%	60.90%
Gross Profit	**$1,01,839**	**$88,186**	**$84,263**	**38.30%**	**38.50%**	**39.10%**
Operating Expenses						

Period	*2018*	*2017*	*2016*	*2018*	*2017*	*2016*
Research & Development	$14,236	$11,581	$10,045	5.40%	5.10%	4.70%
Sales, General & Admin	$16,705	$15,261	$14,194	6.30%	6.70%	6.60%
Operating Income	**$70,898**	**$61,344**	**$60,024**	**26.70%**	**26.80%**	**27.80%**
Add Income and Expense Items	$2,005	$2,745	$1,348	0.80%	1.20%	0.60%
Earnings Before Interest and Tax	$72,903	$64,089	$61,372	27.40%	28.00%	28.50%
Interest Expense	$0	$0	$0	0.00%	0.00%	0.00%
Earnings Before Tax	$72,903	$64,089	$61,372	27.40%	28.00%	28.50%
Income Tax	$13,372	$15,738	$15,685	5.00%	6.90%	7.30%
Net Income	**$59,531**	**$48,351**	**$45,687**	**$22.40%**	**21.10%**	21.20%

Source: https://www.wallstreetmojo.com/common-size-income-statement/

Advantages of Common Size Income Statement Analysis

i) A helps a financial user to understand the income statement more clearly in terms of the ratio or percentage of each item in the income statement as a percentage of the company's total sales.

ii) It helps an analyst ascertain the trend concerning the percentage share of each item on the income statement and its impact on the company's net income.

iii) A financial analyst can use a common-size income statement to compare the financial performances of different entities at a glance since each item is expressed in terms of the percentage of total sales.

Disadvantages of Common Size Income Statement Analysis

i) Many financial experts see the common size income statement as useless because there isn't any approved standard proportion of each item to the total sales.

ii) If year after year preparation of a particular company's income statement is not consistent, then performing any comparative study of common size statement income statements may end up being misleading

E. Fund Flow Analysis

The balance sheet gives a static picture of the company's position on a particular data. It does not disclose the changes that have occurred in the financial position of the unit over a period of time. The investor should know,

a) How are the profits utilized?

b) Financial source of dividend.

c) Source of fiancé for capital expenditure.

d) Source of finance for repayment of debts.

e) The destiny of the sale proceeds of the fixed assets and

f) Use of the proceeds of the share or debenture issue or fixed deposits raised from public.

These items of information are provided in the funds flow statement. It is a statement of the sources and application of funds. It highlights the changes in the financial condition of a business enterprise between two balance sheet dates.

The investor could see clearly the amount of funds generated or lost in operations. He could see how these funds have divided into three significant uses like taxes, dividends and reserves.

Moreover, the application of long term funds towards the acquisition of current assets can be found out. This would reveal the real picture of the financial position of the company.

Example 1: Top Cements Limited presents the following information and you are required to calculate funds from operations.

Profit and Loss Account

Particulars	***Amount (Rs. in Lakhs)***	***Particulars***	***Amount (Rs. in Lakhs)***
To Operation Expenses	100000	By Gross Profit	200000
To Depreciation	40000	By Gain on Sale of Plant	20000
To Loss on Sale of Building	10000		
To Advertisement Suspense Account	5000		
To Discount Allowed	500		
To Discount on Issue of Shares written off	500		
To Goodwill written off	12000		
To Net Profit	52000		
	220000		220000

Solution:

Calculation of Funds from Operations

Particulars	***Amount (Rs. in Lakhs)***	***Amount (Rs. in Lakhs)***
Net Profit (given)		52000
Add: Non-fund or non-operating items which have been debited to Profit & Loss A/c:		
Depreciation	40000	
Loss on Sale of Building	10000	
Advertisement written off	5000	
Discount written off	500	

Goodwill written off	12000	67500
		119500
Less: Non-fund or non-operating items which have been credited to Profit & Loss A/c:		
Gain on Sale of Plant	20000	20000
Funds from Operations		99500

Alternatively,

Adjusted Profit & Loss Account

Particulars	***Amount (Rs. in Lakhs)***	***Particulars***	***Amount (Rs. in Lakhs)***
To Depreciation	40000	By Opening balance	-
To Loss on Sale of Building	10000	By Gain on Sale of Plant	20000
To Advertisement Suspense A/c	5000	**By Funds from Operations (Balancing Figure)**	**99500**
To Discount written off	500		
To Goodwill written off	12000		
To Closing balance	52000		
	119500		119500

Example 2: The Balance Sheets of United Corporation as on 31st December, 2020 and 31st December, 2021 are as follows:

Liabilities	***2020 (Rs.)***	***2021 (Rs.)***	***Assets***	***2020 (Rs.)***	***2021 (Rs.)***
Share Capital	500000	700000	Land and Buildings	80000	120000
Profit & Loss	100000	160000	Plant and Machinery	500000	800000
General Reserve	50000	70000	Stock	100000	75000
Sundry Creditors	153000	190000	Debtors	150000	160000
Bills Payable	40000	50000	Cash	20000	20000
Outstanding Expenses	7000	5000			
	850000	1175000		850000	1175000

Additional information:

1. Rs.50000 depreciation has been charged on plant and machinery during 2021.
2. A piece of machinery was sold for Rs.8000 during 2021. It had cost Rs.12000, depreciation of Rs.7000 had been provided on it.

Prepare a Schedule of Changes in Working Capital and a Statement showing the Sources and Application of Funds for 2021.

Solution:

Schedule of Changes in Working Capital

Items	***2020***	***2021***	***Changes in Working Capital***	
			Increase	***Decrease***
Current Assets:				
Stock	100000	75000	-	25000
Debtors	150000	160000	10000	-
Cash	20000	20000	-	-
	270000	255000		
Current Liabilities:				
Sundry Creditors	153000	190000	-	37000
Bills Payable	40000	50000	-	10000
Outstanding Expenses	7000	5000	2000	-
	200000	245000		
Working Capital (Current Assets – Current Liabilities)	70000	10000		
Net Decrease in Working Capital		**60000**	60000	
	70000	70000	72000	72000

Statement and Sources of Application of Funds

(For the year ended December 31, 2021)

Sources	*Rs.*	*Application*	*Rs.*
Funds from Operations(1)	127000	Purchase of Land and Buildings	40000
Issue of Shares	200000	Purchase of Plant and Machinery (2)	355000
Sale proceeds of machinery	80000		
Decrease in working capital	60000		
	395000		395000

Workings:

(1) Adjusted Profit & Loss Account

Particulars	*Rs.*	*Particulars*	*Rs.*
To Plant & Machinery A/c (Depreciation)	50000	By Balance b/d (Opening Balance)	100000
To General Reserve (Transferred during 2021)	20000	By Plant & Machinery (Profit on sale)	3000
To Balance c/d	160000	By Funds from Operations (Balancing figure)	127000
	230000		230000

(2) Plant & Machinery

Particulars	*Rs.*	*Particulars*	*Rs.*
To Balance b/d	500000	By Bank (Sale of machinery)	8000
To Profit & Loss A/c (profit on sale)	3000	By Profit & Loss A/c (Depreciation)	50000
To Bank A/c (Purchase of Machinery & Plant) (Balancing figure)	355000	By Balance c/d	800000
	858000		858000

F. Cash Flow Statement

The investor is interested in knowing the cash inflow and outflow of the enterprise. The cash flow statement is prepared with the help of balance sheet, income statement and some additional information. It can be either prepared in the vertical form or in the horizontal form. Cash flows related to operations and other transactions are computed. The statement shows the causes of changes in cash movements over an operating cycle. The factors responsible for the reduction of cash balances in spite of increase in profits or vice versa are ascertained.

Example 1: From the following Profit and Loss Account of Success Ltd., calculate Net Cash Flows from operating activities.

Particulars	*$*	*Particulars*	*$*
To depreciation	40800	By gross profit	394400
To rent	72000	By profit on sale of building	53600
To administrative expenses	48000	By profit on sale of furniture	50400
To salaries	64000	By income tax refund	18400
To loss on sale of plant	12800		
To provision for bad debts	64000		
To goodwill written off	34400		
To loss on sale of machinery	19600		
To provision for tax	24000		
To proposed dividend	48000		
To net profit	89200		
Total	**5,16,800**	**Total**	**5,16,800**

Solution:

Calculation of Net Cash Flow from Operating Activities of Success Limited

Particulars	*$*	*$*
Profit for the year		89200
Add:		
Provision for bad debts	64000	
Depreciation	40800	
Goodwill written off	34400	
Loss on sale of plant	12800	
Loss on sale of machinery	19600	
Provision for tax	24000	
Proposed dividend	48000	243600

		332800
Less:		
Profit on sale of building	53600	
Profit on sale of furniture	50400	
Income tax refund	18400	122400
Net Cash Flow from Operating Activities		210400

Example 2:

From the following information extracted from the book of Max Ltd. for the year 2019-20, calculate net cash flow from investing activities.

Particulars	***2018-19 ($)***	***2019-20 ($)***
Furniture	100,000	120,000
Machinery	1,500,000	1,800,000
Building	2,000,000	1,980,000
Land (at cost)	1,800,000	1,600,000
Investment (long-term)	90,000	210,000

Additional information is given as follows:

- Depreciation charged on furniture during the year was $10,000.
- Depreciation on machinery charged during the year was $25,000.
- Machinery, the book value of which was $80,000, sold for $75,000.
- Land was sold at a profit of $90,000.

Solution:

Particulars	***$***	***$***
Cash Receipts		
Cash receipts from sale of land	290000	
Sale of machinery	75000	365000
Cash Payments		
Purchase of furniture	30000	
Purchase of machinery	405000	
Purchase of investment (210000 – 90000)	120000	555000
Net Cash Flow from Investing Activities		(190000)

Note: $190,000 indicates cash outflows are more than inflows.

Working Notes:

Furniture Account

Particulars	*$*	*Particulars*	*$*
To balance b/d	100000	By Depreciation	10000
To Bank- Purchase of Furniture (Balancing figure)	30000	By Balance c/d	120000
	130000		130000

Machinery Account

Particulars	*$*	*Particulars*	*$*
To balance b/d	1500000	By Depreciation	25000
		By Bank- Sale of Machinery	75000
		By Loss on Sale of Machinery ($80000 - $75000)	5000
To Bank- Purchase of Machinery	405000	By Balance c/d	1800000
	1905000		1905000

Building Account

Particulars	*$*	*Particulars*	*$*
To balance b/d	2000000	By Depreciation (Balancing figure)	20000
		By Balance c/d	1980000
	2000000		2000000

Land Account

Particulars	*$*	*Particulars*	*$*
To balance b/d	1800000	By Bank – Sale of Land ($200000 + $90000)	290000
To Profit and Loss Account (Profit on Sale of Land)	90000	By Balance c/d	1600000
	1890000		1890000

TECHNICAL ANALYSIS

In the fundamental analysis, share prices are predicted on the basis of a three stage analysis. After the analysis has been completed, the deciding factors that emerge are the financial performance indicators like earnings and dividends of the company. The fundamentalist makes a judgement of the equity share value with a risk return framework based upon the earning power and the economic environment. However, in actual practice, it often happens that a share having sound fundamentals refuses to rise in value and vice versa. We would now examine an alternative approach to predict share price behavior. This approach is called the Technical Analysis. It is used in conjunction with fundamental analysis and not as its substitute.

Technical analysis is an analysis for forecasting the direction of prices through the study of past market data, primarily price and volume. This Technique assumes market prices of securities are determined by the demand-supply equilibrium. The shifts in this equilibrium give rise to certain patterns of price and volume of trading which have a tendency to repeat themselves over a period of time. An analyst who is familiar with these patterns can predict the future behaviour of stock prices by noticing the formation of these patterns. These predictions are indicative and do not provide irrefutable declarations about future trends. In this type of analysis, no weightage is given to intangible items like investors' attitude, market sentiment, optimism, pessimism etc.

Technical analysis is based on the following assumptions:

- The inter-play of demand and supply determines the market value of shares.
- Supply and demand are governed by various factors – both rational and irrational.
- Stock values tend to move in trends that persist for a reasonable time.
- These trends change as a result of change in demand-supply equilibrium.
- Shifts in demand and supply can be detected in charts of market action.
- Chart patterns tend to repeat themselves and this repetition can be used to forecast future price movements.
- Markets behave in a random style.
- Markets discount every future event that has a bearing upon share values.

DOW JONES THEORY

It is one of the earliest theories of technical analysis. The theory was formulated by Charles H. Dow of Dow Jones & Co. who was the first editor of Wall street Journal of USA. According to this theory, share prices demonstrate a pattern over four to five years.

These patterns can be divided into three distinct cyclical trends- primary, secondary or intermediate and minor trends.

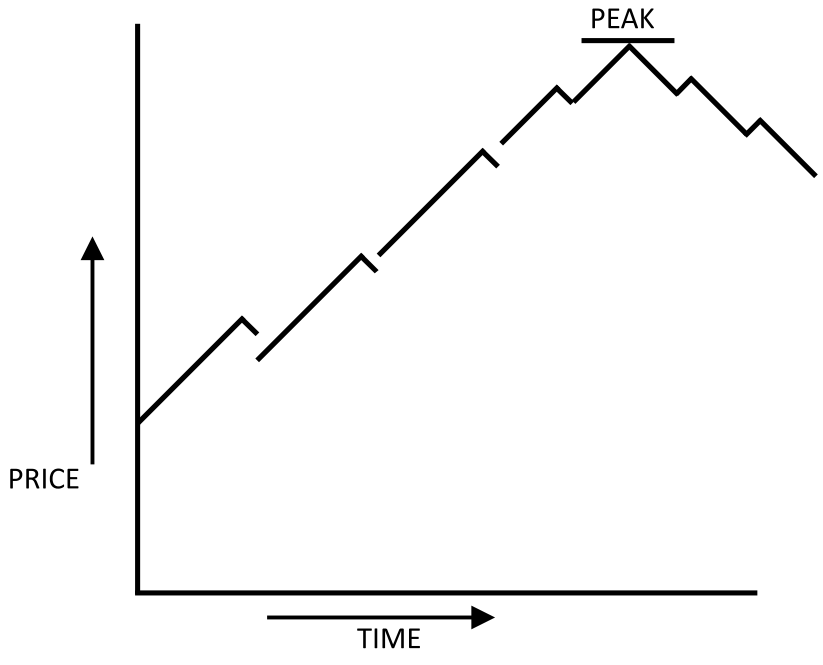
Primary Trends

The primary trend lasts from one to three years. Over this period, the markets exhibit definite upward or downward movement which is punctuated by shorter spans of trend reversal in the opposite directions. The trend reversal is called the secondary trend. Primary trend is indicative of the overall pattern of movement.

In Dow theory, the primary trend is the major trend of the market, which makes it the most important one to determine. This is because the overriding trend is the one that affects the movements in stock prices. The primary trend will also impact the secondary and minor trends within the market.

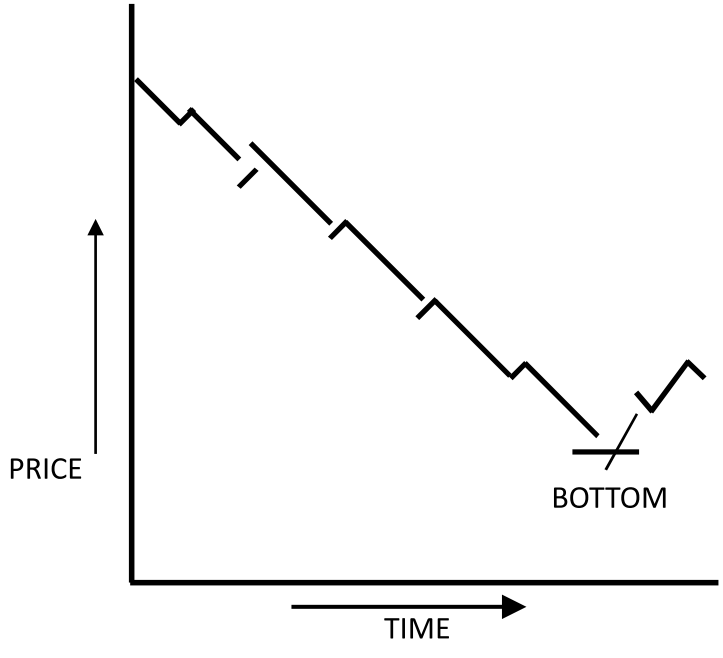
If the primary trend is upward, it is called a bullish phase of the market. If the primary trend is downwards, it is called a bearish phase. Illustrations of bullish phase and bearish phase are given below:

Graph of Bullish Phase



In a bullish phase, after each peak, there is a fall but the subsequent rise is higher than the previous one. The prices reach higher level with each rise. After the peak has been reached, the primary trend now turns to a bearish phase.

Graph of a Bearish Phase



In a bearish phase, the overall trend is that of decline in share values. After each fall, there is slight rise but the subsequent fall is even sharper.

Secondary Trends

In Dow theory, a primary trend is the main direction in which the market is moving. Conversely, a secondary trend moves in the opposite direction of the primary trend, or as a correction to the primary trend.

For example, an upward primary trend will be composed of secondary downward trends. This is the movement from a consecutively higher high to a consecutively lower high. In a primary downward trend the secondary trend will be an upward move, or a rally. This is the movement from a consecutively lower low to a consecutively higher low.

In general, a secondary, or intermediate, trend typically lasts between three weeks and three months, while the retracement of the secondary trend generally ranges between one-third to two-thirds of the primary trend's movement.

Minor Trend

The last of the three trend types in Dow theory is the minor trend, which is defined as a market movement lasting less than three weeks. Minor trends are changes occurring every day within a narrow range. These trends are not decisive of any major movement. The minor trend is generally the corrective moves within a secondary move, or those moves that go against the direction of the secondary trend.

TOOLS OF TECHNICAL ANALYSIS

The two variables concerning groups of securities or individual securities that technicians watch are the behavior of prices and volume of trading contributing to and influenced by changing prices. Technical analysts use two major types of tools for their analysis. These are the charts and the price indicators.

1. TECHNICAL CHARTS

These are the plottings of prices and trading volumes on charts. The purpose of reading and analysing these charts is to determine the demand-supply equation at various levels and thus to predict the direction and extent of future movement of the prices. The charts are not infallible but because of their repeated accuracy, they have come to be accepted. In all the charts, a correlation exists between market price action and the volume of trading when the price increase is accompanied by a surge in trading volumes, it is a sure sign of strength. On the other hand, when the decline in share prices is accompanied by increased volumes, it is indicative of beginning of bearish trend.

There are four ways to construct a chart. These are Line Chart, Bar Chart, Candle Stick Chart and Point & Figure Chart.

Line Chart

A Line chart is a style of chart that is created by connecting a series of data points together with a line. This is the most basic type of chart used in finance and it is generally created by connecting a series of past prices together with a line. Line charts are the most basic type of chart because it represents only the closing prices over a set period. The line is formed by connecting the closing prices for each period over the timeframe and the intra-period highs and lows of stock prices are ignored. This type of chart is useful for making broad analysis over a longer period of time.

Line Chart Example – Source: StockCharts.com

Bar Chart

Bar charts expand upon the line chart by adding the open, high, low, and close – or the daily price range, in other words – to the mix. The chart is made up of a series of vertical lines that represent the price range for a given period with a horizontal dash on each side that represents the open and closing prices. The opening price is the horizontal dash on the left side of the horizontal line and the closing price is located on the right side of the line. If the opening price is lower than the closing price, the line is often shaded black to represent a rising period. The opposite is true for a falling period, which is represented by a red shade.

Bar Chart Example – Source: StockCharts.com

Candlestick Charts

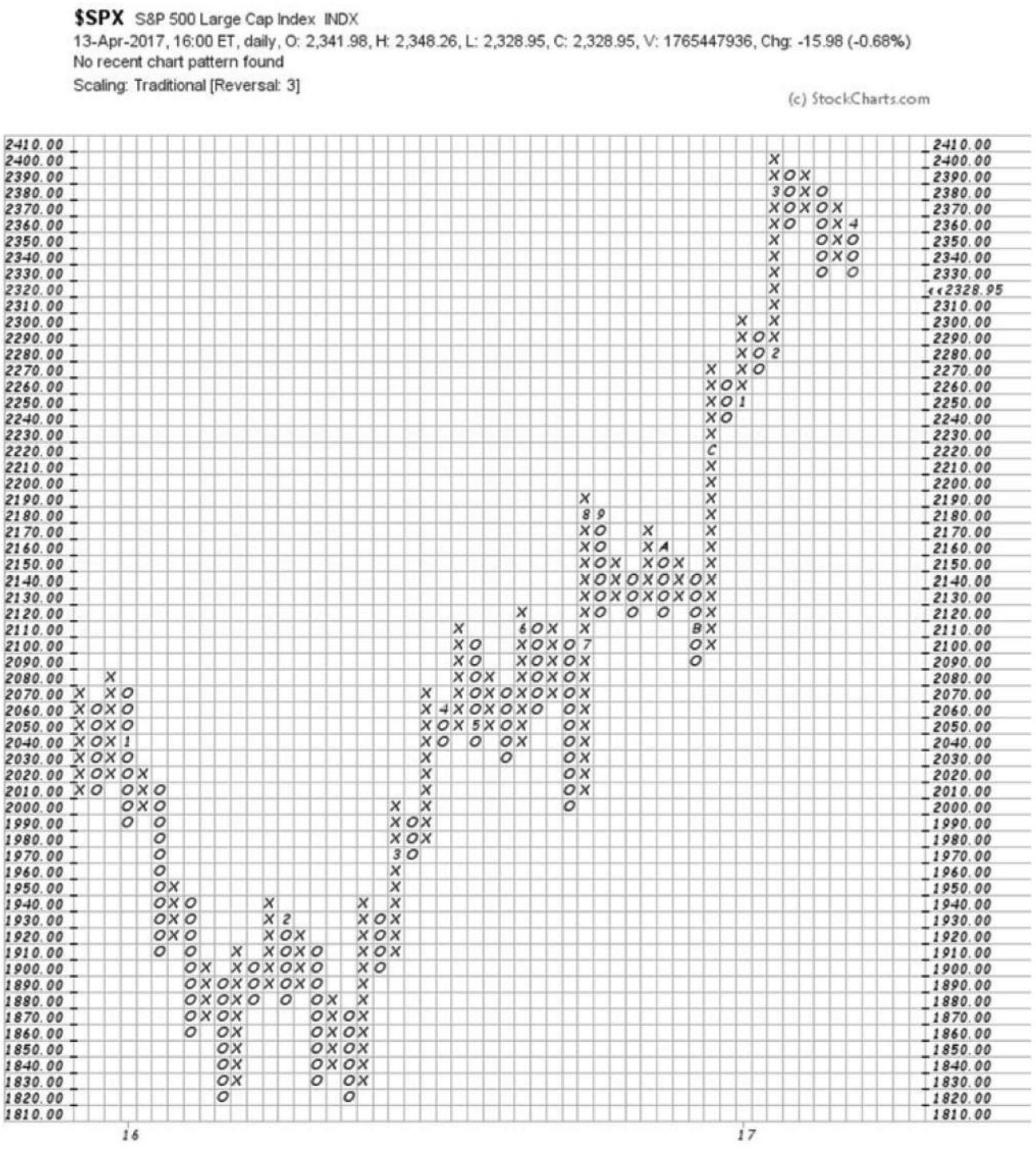
Like a bar chart, candlestick charts have a thin vertical line showing the price range for a given period that is shaded different colors based on whether the stock ended higher or lower. The difference is a wider bar or rectangle that represents the difference between the opening and closing prices.

Falling periods will typically have a red or black candlestick body, while rising periods will have a white or clear candlestick body. Days where the open and closing prices are the same will not have any wide body or rectangle at all.

Candlestick Example – Source: StockCharts.com

Point and Figure Charts

In this type of charts, emphasis is laid on charting price changes only and time and volume elements are ignored. The first step in drawing a figure and point chart is to put a X in the appropriate price column of a graph. Successive price increases are added vertically upwards in the same column as long as the uptrend continues. Once the price drops, the figures are moved to another column and Os are entered in downward series till the downward trend is reversed.



Point and Figure Chare Example – Source: StockCharts.com

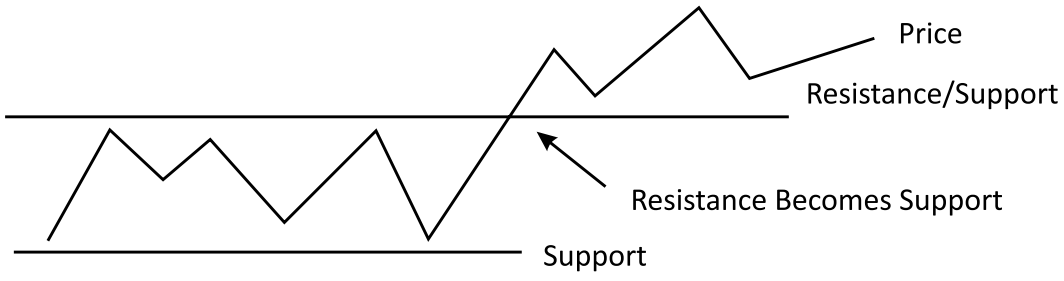
Patterns created by charts

Once the charts have been constructed, analysts seek to locate certain indicators/patterns in the charts. The common patterns are being described below:

1. Support and resistance levels

A support level indicates the bottom which the share values are unable to pierce. After rising time and again, the share price dips to a particular level and then starts rising again. At this level, the share gets buying support. A resistance level is that level after which the share price refuses to move up in repeated efforts. At this level, selling emerges. Support and resistance levels are valid for a particular time period. Once these levels are breached, beginning of a new bull or bear phase is signaled.

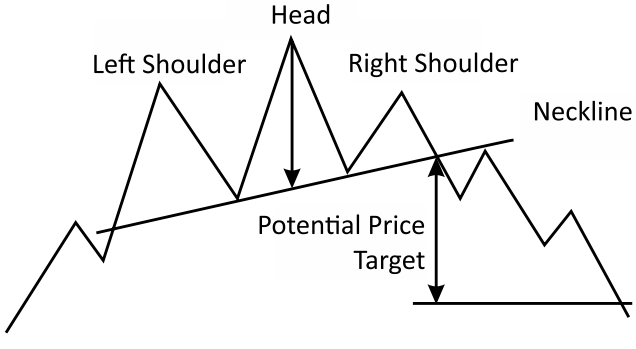
Support and Resistance



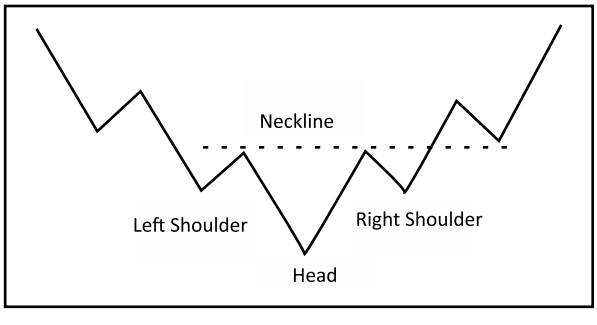
2. Heads and Shoulders configuration

In this type of chart configuration, a formation similar to heads and shoulders is created wherein the neckline acts as the resistance or support line. As the head and shoulder top is formed, a resistance level appears at the top of the head. The volumes start declining near the head top and reversal sets in. The volumes become heavy again and shrink near the neckline where another reversal of trend begins.

Head and Shoulders Top (HST) Pattern

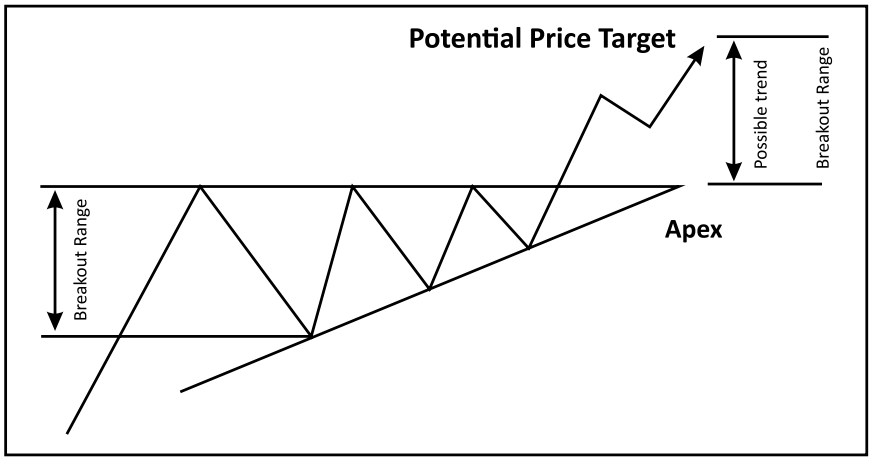


Inverse Head and Shoulder Top (IHST) Pattern



3. Triangle or coil formation

This pattern represents a pattern of uncertainty. Hence it is difficult to predict which way the price will break out.

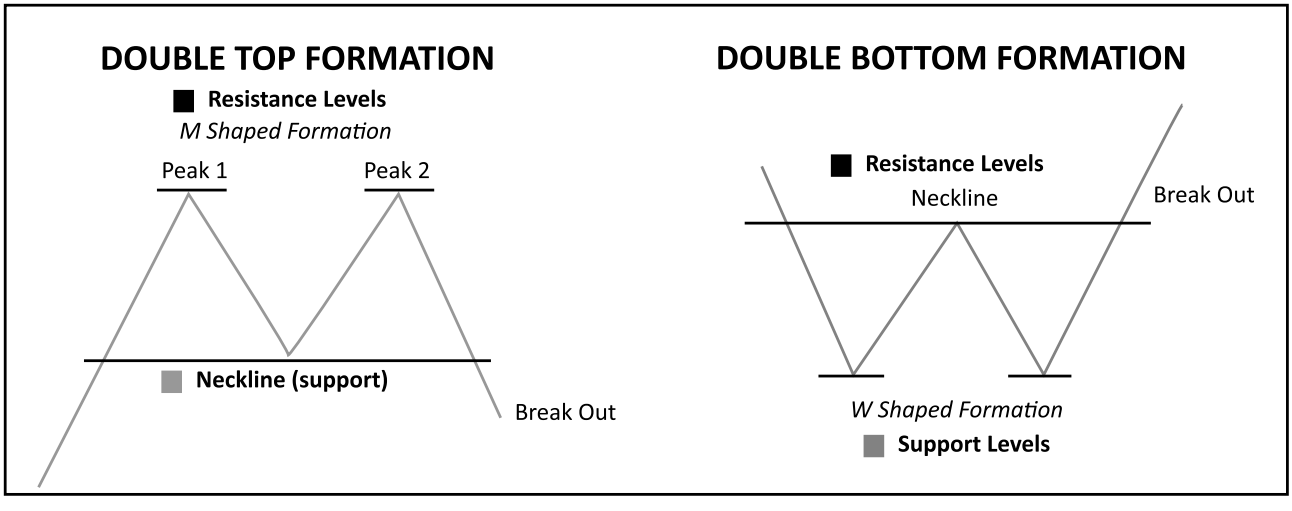


4. Double Top Formation

It represents a bearish development, signaling that the price is expected to fall.

5. Double bottom formation

It represents a bullish development, signaling that the price is expected to rise.



Limitations of charts

Interpretation of charts is prone to subjective analysis. This factor is a major cause of often contradictory analysis being derived from the same charts. Also the changes in charts are quite frequent in the short term perspective leading to a host of buy and sell recommendations which are not in the best interest of the investor. Another disadvantage is that decisions are made on the basis of chart alone and other factors are ignored.

2. TECHNICAL INDICATORS

Apart from the charts, technical analysts use a number of indicators generated from prices of stocks to finalise their recommendations. These indicators are often used in conjunction with charts. Some of the important

indicators are the Advance Decline Ratio, the Market Breadth Index and Moving Averages.

(a) Advance-Decline Ratio

It is the ratio of the number of stocks that increase to the number of stocks that have declined. If the ratio is more than one, the trend is assumed to be bullish. If the ratio starts declining, a change of trend is signaled.

(b) Market Breadth Index

This index is a variation of the Advance-Decline Ratio. This index is computed by taking the difference between the number of stocks rising and the number of stocks falling. If during a month, 400 out of 1000 stocks in the market have risen and 300 have declined while 300 have remained unchanged, then market breadth would be calculated as

= 2(400–300)/300. The figure of each time period is added to the previous period. If market breadth is increasing along with rise in stock indices, it confirms the bullish trend and vice cersa.

(c) Moving Averages

A moving average is the average of share values of a set of consecutive number of days. If we have to calculate 50 days moving average, we calculate the average for days 1–50. Then on day 51, we add the value of day 51 and deduct the value of day 1 and so on . Similarly, moving averages for 100 days, 200 days and 300 days can be calculated. Moving averages provide a benchmark for future valuation. If share value is below the moving average, it has scope for appreciation. If the value is above the moving average, the upside is limited in the near term.

(d) Relative Strength Index

The relative strength index (RSI) is a momentum indicator used in technical analysis. RSI measures the speed and magnitude of a security's recent price changes to evaluate overvalued or undervalued conditions in the price of that security.

The RSI is displayed as an oscillator (a line graph) on a scale of zero to 100. The indicator was developed by J. Welles Wilder Jr. and introduced in his seminal 1978 book, New Concepts in Technical Trading Systems.

The RSI can do more than point to overbought and oversold securities. It can also indicate securities that may be primed for a trend reversal or corrective pullback in price. It can signal when to buy and sell. Traditionally, an RSI reading of 70 or above indicates an overbought situation. A reading of 30 or below indicates an oversold condition.

As a momentum indicator, the relative strength index compares a security's strength on days when prices go up to its strength on days when prices go down. Relating the result of this comparison to price action can give traders an idea of how a security may perform. The RSI, used in conjunction with other technical indicators, can help traders make better-informed trading decisions.

The RSI uses a two-part calculation that starts with the following formula:

$$RSI = 100 - \frac{100}{1 + RS}$$

$$RS = \frac{\text{Average Gain Per Day}}{\text{Average Loss Per Day}}$$

RS= Relative Strength

The RSI can be calculated for any number of days depending on the wish of the technical analyst and the time frame of trading adopted in a particular stock market. RSI is calculated for 5,7,9 and 14 days. If the period taken is more, the possibility of getting wrong signals is reduced. Reactionary or sustained rise or fall in the price of the scrip is foretold by the RSI.

Calculation of RSI of ABC Limited

Date	*Price (Rs)*	*Gain*	*Loss*
October 1	300	-	-
October 6	304	4	-
October 7	319	15	-
October 8	317	-	2
October 11	319	2	-
October 12	333	14	-
October 13	331	-	2
October 14	332	1	-
October 18	348	16	-
October 19	346	-	2
		52 / 6 =8.67	6/3 = 2

$$RSI = 100 - \frac{100}{1 + 4.335}$$

$$= 100 - 18.74$$

$$= 81.26$$

The broad rule is, if the RSI crosses seventy there may be downturn and it is time to sell. If the RSI falls below thirty it is time to pick up the scrip.

(e) Aroon Indicator

The Aroon indicator is a technical indicator that is used to identify trend changes in the price of an asset, as well as the strength of that trend. In essence, the indicator measures the time between highs and the time between lows over a time period. The idea is that strong uptrends will regularly see new highs, and strong downtrends will regularly see new lows. The indicator signals when this is happening, and when it isn't.

The indicator consists of the "Aroon up" line, which measures the strength of the uptrend, and the "Aroon down" line, which measures the strength of the downtrend. The Aroon indicator was developed by Tushar Chande in 1995.

Formulas of the Aroon Indicator

$$\text{Aroon Up} = \frac{25 - \text{Periods Since 25 period High}}{25} * 100$$

$$\text{Aroon Down} = \frac{25 - \text{Periods Since 25 period Low}}{25} * 100$$

The Aroon calculation requires the tracking of the high and low prices, typically over 25 periods.

1. Track the highs and lows for the last 25 periods on an asset.
2. Note the number of periods since the last high and low.
3. Plug these numbers into the Up and Down Aroon formulas.

The Aroon Up and the Aroon Down lines fluctuate between zero and 100, with values close to 100 indicating a strong trend and values near zero indicating a weak trend. The lower the Aroon Up, the weaker the uptrend and the stronger the downtrend, and vice versa. The main assumption underlying this indicator is that a stock's price will close regularly at new highs during an uptrend, and regularly make new lows in a downtrend.

The indicator focuses on the last 25 periods, but is scaled to zero and 100. Therefore, an Aroon Up reading above 50 means the price made a new high within the last 12.5 periods. A reading near 100 means a high was seen very recently. The same concepts apply to the Down Aroon. When it is above 50, a low was witnessed within the 12.5 periods. A Down reading near 100 means a low was seen very recently.

Crossovers can signal entry or exit points. Up crossing above Down can be a signal to buy. Down crossing below Up may be a signal to sell. When both indicators are below 50 it can signal that the price is consolidating. New highs or lows are not being created. Traders can watch for breakouts as well as the next Aroon crossover to signal which direction price is going.

(f) Price Rate of Change

The Price Rate of Change (ROC) is a momentum-based technical indicator that measures the percentage change in price between the current price and the price a certain number of periods ago. The ROC indicator is plotted against zero, with the indicator moving upwards into positive territory if price changes are to the upside, and moving into negative territory if price changes are to the downside.

Thus, The Price Rate of Change (ROC) oscillator is an unbounded momentum indicator used in technical analysis set against a zero-level midpoint. A rising ROC above zero typically confirms an uptrend while a falling ROC below zero indicates a downtrend. When the price is consolidating, the ROC will hover near zero. In this case, it is important traders watch the overall price trend since the ROC will provide little insight except for confirming the consolidation.

$$\text{ROC} = \frac{\text{Closing Price}_{p} - \text{Closing Price}_{p-n}}{\text{Closing Price}_{p-n}} \times 100$$

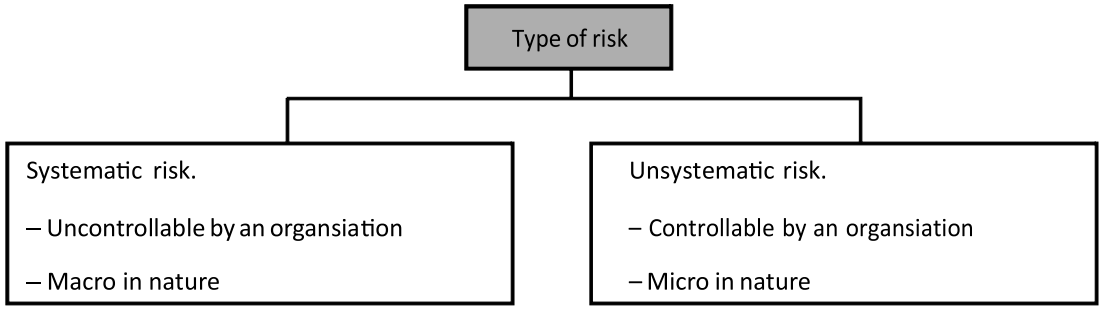
Where:

Closing Price$_p$=Closing price of most recent period

Closing Price$_{p-n}$=Closing price n periods beforemost recent period

RISK AND ITS TYPES

Risk in security analysis is generally associated with the possibility that the realized returns will be less than the returns that were expected. In finance, different types of risk can be classified under two main groups, viz., systematic risk and unsystematic risk.



A. Systematic risk.

B. Unsystematic risk.

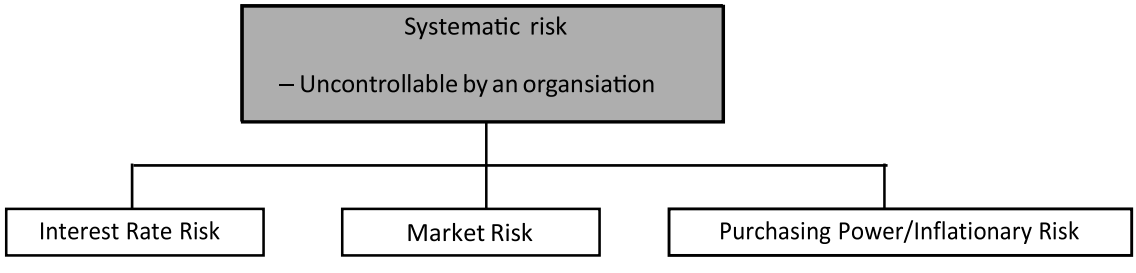
A. Systematic Risk

Those forces that are uncontrollable, external and broad in their effect are called sources of systematic risk. Systematic risk is due to the influence of external factors on an organization. Such factors are normally uncontrollable from an organization's point of view. Systematic risk is a macro in nature as it affects a large number of organizations operating under a similar stream or same domain. It cannot be planned by the organization.

In this way economic, political and sociological changes are sources of systematic risk. For example, if an economy moves into recession or if there is a political upheaval, it will cause the prices of nearly all the securities, whether bond or equity to decline.

Firms with high systematic risk tend to be those whose sales, profits and stock prices follow the general trend in the level of economic or stock market activity. These may include companies that deal in basic industrial goods like automobile manufactures.

The types of systematic risk are depicted and listed below.



1. Interest rate risk,
2. Market risk and
3. Purchasing power or inflationary risk.

Now let's discuss each risk classified under this group.

1. Interest rate risk

Interest-rate risk is the variation in the single period rates of return caused by the fluctuations in the market interest rate. It particularly affects debt securities as they carry the fixed rate of interest.

2. Market risk

Market risk is associated with consistent fluctuations seen in the trading price of any particular shares or securities. That is, it arises due to rise or fall in the trading price of listed shares or securities in the stock market.

3. Purchasing power or inflationary risk

Purchasing power risk is also known as inflation risk. It is so, since it emanates (originates) from the fact that it affects a purchasing power adversely. It is not desirable to invest in securities during an inflationary period.

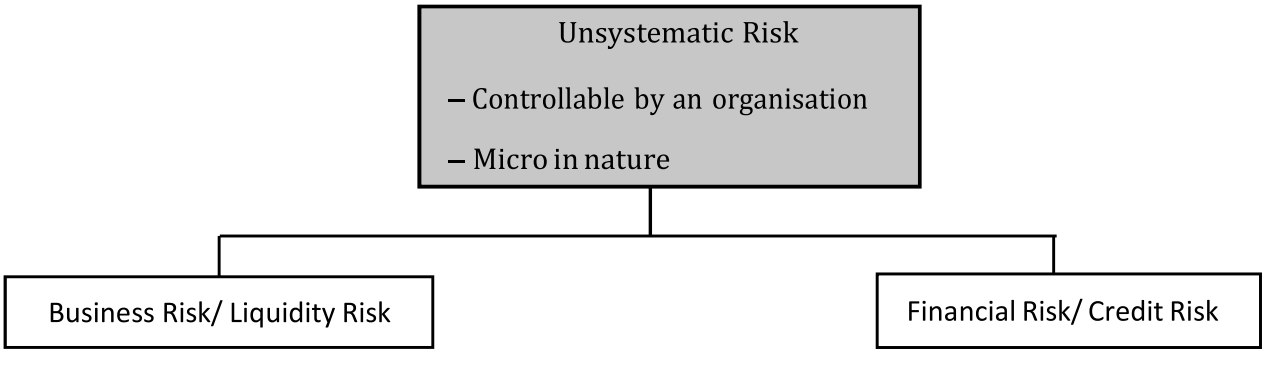
B. Unsystematic Risk

Unsystematic risk is due to the influence of internal factors prevailing within an organization. Such factors are controllable, internal factors which are peculiar to a particular industry or firm/(s). It may be because of change in management, labour strikes which will impact the returns of only specific firms which are facing the problem.

It is a micro in nature as it affects only a particular organization. It can be planned, so that necessary actions can be taken by the organization to mitigate (reduce the effect of) the risk.

Higher proportion of unsystematic risk is found in firms producing non durable consumer goods. Examples include suppliers of telephone, power and food stuffs.

The types of unsystematic risk are depicted and listed below.



1. Business or liquidity risk,
2. Financial or credit risk

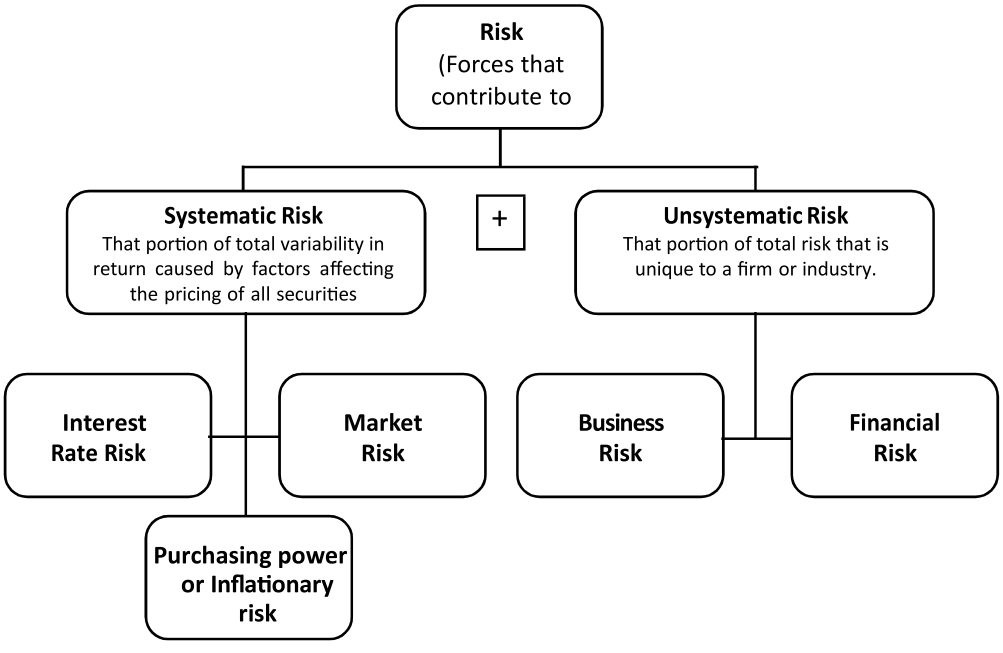
Now let's discuss each risk classified under this group.

1. Business or liquidity risk

Business risk is also known as liquidity risk. It is so, since it emanates (originates) from the sale and purchase of securities affected by business cycles, technological changes, etc.

2. Financial or credit risk

Financial risk is also known as credit risk. It arises due to change in the capital structure of the organization. The capital structure mainly comprises of three ways by which funds are sourced for the projects.



RETURN OF THE SECURITY

Return is the primary motivating force that drives investment. It represents the reward for undertaking investment. One of the important property of a security that the investors are concerned with is the return that can be expected from holding a security. Earning a return on an investment requires a passage of time. After some time has passed, one may make an objective measurement of the rate of an investment return that has been achieved. The word "return" can be misleading, since no single measure of return can answer all possible questions regarding results. The reasons lie in the fact that taxes, inflation, commissions, and the timing of cash flows all play major roles in "correct" calculation of returns.

The return of an investment consists of two components:

Current Return – The first component that comes to mind when one is thinking about return is the periodic cash flow (income), such as dividend or interest, generated by the investment. Current return is measured as the periodic income in relation to the beginning price of the investment.

Capital Return – The second component of return is reflected in the price change called the capital return – it is simply the price appreciation (or depreciation) divided by the beginning price of the asset. For assets like equity stocks, the capital return predominates.

Thus, the total return for any security is defined as:

Total return = Current return + Capital return

The current return can be zero or positive, whereas the capital return can be negative, zero or positive.

MEASURING RETURN

Total return, or holding period return (r), is perhaps the best unique, rational and comparable measures of results, no matter what type of asset is under discussion. Holding period return is the total return received from holding an asset or portfolio of assets over a period of time, generally expressed as a percentage. Holding period return is calculated on the basis of total returns from the asset or portfolio – i.e. income plus changes in value. It is particularly useful for comparing returns between investments held for different period of time.

Holding Period Return (HPR) and **annualized HPR** for returns over multiple years can be calculated as follows: Holding Period Return = Income + (End of Period Value – Initial Value) / Initial Value

Annualized HPR = {[(Income + (End of Period Value – Initial Value)] / Initial Value+ 1}$^{1/n}$ – 1, where n = number of years.

Returns for regular time periods such as quarters or years can be converted to a holding period return through the following formula:

(1 + HPR) = (1 + r1) x (1 + r2) x (1 + r3) x (1 + r4) where r1, r2, r3 and r4 are periodic returns. Thus,

Example 1:

$$HPR = [(1 + r1) \times (1 + r2) X \ldots (1 + rn)] - 1$$

r = % return per period

n = number of periods

Mr. A invested Rs. 10,000 in shares of XYZ Company 10 years ago, and that your shares (including reinvested dividends) are currently worth Rs. 23,800. Using this information, calculate total investment return of Mr. A.

$$\text{Total investment return} = \frac{\text{Rs.23,800} - \text{Rs.10,000}}{\text{Rs.10,000}} = 1.38 \text{ (or } 138\%)$$

So, total return over a decade has been 138%. Since we're considering a 10-year period, we will use (1/10) i.e. 0.1 as power to calculate the annualized return:

Annualised return = $(1 + 1.38)^{0.1} - 1 = 0.0906$

Translated to a percentage, this shows that Mr. A's 10-year investment in XYZ Company produced an annualized return of 9.06%.

Often, it is necessary to adjust the return for taxes which makes a difference to the total returns. Let us take a simple example to illustrate these point.

Portfolio Information		
Beginning value		₹ 1,00,000
Cash flows		
Dividends received	₹7,500	
Capital appreciation	₹12,500	
Ending value		₹1,20,000
Total Return	[(1,20,000/1,00,000)]-1 = **20%**	

Suppose the investor has a tax rate of 30%. The Rs.7,500 in dividends yields only Rs.5,250 after taxes (Rs.7500 *.70), and the capital gains is only Rs.8,750 after taxes (Rs.12,500*.70). So, after-tax return equals

[(1,00,000+5,250+ 8,750)/1,00,000]-1= 14%

High nominal returns may also reflect high inflation rate. Suppose that during the performance measurement period a 10 percent return was required just to maintain purchasing power. After-tax real return equals

[(1,00,000+5,250+ 8,750)/1,00,000(1.10)]-1= 3.6364%

So, the rate of return to this portfolio is either 20% or 14% or 3.6364%. for a tax exempt investor the 20% return is appropriate. For a taxable investor, the return is only 14%. Inflation affects both equally.

Example 2: Three years ago, Fred invested $10,000 in the shares of ABC Corp. Each year, the company distributed dividends to its shareholders. Each year, Fred received $100 in dividends. Note that since Fred received $100 in dividends each year, his total income is $300. Today, Fred sold his shares for $12,000, and he wants to determine the HPR of his investment.

Solution: Using the HPR formula, we can find the following:

$$\text{Holding Period Return (HPR)} = \frac{\$300 + \$12000 - \$\ 10000}{\$10000} = 0.23 \text{ or } 23\%$$

Example 3: What is the HPR for an , who bought a stock a year ago at $50 and received $5 in dividends over the year, if the stock is now trading at $60?

Solution:

$$\text{Holding Period Return} = \frac{5 + (60 - 50)}{50} = 30\%$$

Example 4: Which investment performed better: Mutual Fund X, which was held for three years and appreciated from $100 to $150, providing $5 in distributions, or Mutual Fund B, which went from $200 to $320 and generated $10 in distributions over four years?

Solution:

$$\text{HPR for Fund X} = \frac{5 + (150 - 100)}{100} = 55\%$$

$$\text{HPR for Fund Y} = \frac{10 + (320 - 200)}{200} = 65\%$$

Note: Fund B had the higher HPR, but it was held for four years, as opposed to the three years for which Fund X was held. Since the time periods are different, this requires annualized HPR to be calculated, as shown below.

Calculation of Annualized HPR

Annualized HPR for Fund X:

$= (0.55 + 1)^{1/3} - 1 = 15.73\%$

Annualized HRP for Fund Y:

$= (0.65 + 1)^{1/4} - 1 = 13.34\%$

Thus, despite having the lower HPR, Fund X was the superior investment.

APPROACHES TO VALUATION OF SECURITY

Security analysis begins with assessing the intrinsic value of security. There are three main schools of thought on the matter of security price evaluation. Advocates of different schools can be classified as (1) Fundamentalists; (2) Technicians; and (3) efficient market advocates. Let us compare these different perspectives in summary form before describing them in detail.

(1) The Fundamental Approach: The Fundamental approach suggests that every stock has an intrinsic value. Estimate of intrinsic worth of a stock is made by considering the earnings potential of firm which depends

upon investment environment and factors relating to specific industry, competitiveness, quality of management, operational efficiency, profitability, capital structure and dividend policy. The earning potential is converted into the present value of the future stream of income from that stock discounted at an appropriate risk related rate of interest. Security analysis is done to compare the current market value of particular security with the intrinsic or theoretical value. Decisions about buying and selling an individual security depends upon the comparison. If the intrinsic value is more than the market value, the fundamentalists recommend buying of the security and vice versa.

(2) Technical Approach: The technical analyst endeavours to predict future price levels of stocks by examining one or many series of past data from the market itself. The basic assumption of this approach is that history tends to repeat itself and the price of a stock depends on supply and demand in the market place and has little relationship with its intrinsic value. All financial data and market information of a given security is reflected in the market price of a security. Therefore, an attempt is made through charts to identify price movement patterns which predict future movement of the security. The main tools used by technical analysis are: (1) The Dow Jones theory which asserts that stock prices demonstrate a pattern over four to five years and these patterns are mirrored by indices of stock prices. The theory employs two Dow Jones averages – the industrial average and the transportation average. If industrial average is rising, then transport average should also rise. Simultaneous price movement is the main prediction which may show bullish as well as bearish results. Chart Patterns are used along with Dow Jones Theory to predict the market movements.

(3) Efficient Capital Market Theory : The theory is popularly known as "Efficient Capital Market Hypothesis: (ECMH). The advocates of this theory contend that securities markets are perfect, or at least not too imperfect. The theory states that it is impossible to beat the market because stock market efficiency causes existing share prices to always incorporate and reflect all relevant information. It is based on the assumption that in efficient capital markets prices of traded securities always fully reflect all publicly available information concerning those securities. Market efficiency was development in 1970 by the economist Eugene Fama, whose theory of efficient market hypothesis stated that it is not possible for an investor to outperform the market because all available information built in to all stock prices. For market efficiency, there are three essential conditions; (i) all available information is cost free to all market participants; (ii) no transaction costs; and (iii) all investors similarly view the implications of available information on current prices and distribution of future prices of each security.

It has been empirically proved that stock prices behave randomly under the above conditions. These conditions have been rendered unrealistic in the light of the actual experience because there is not only transaction cost involved but traders have their own information base. Moreover, information is not costless and all investors do not take similar data and interpretation with them.

Efficient Market Hypothesis has put to challenge by the fundamental and technical analysts to the extent that random walk model is valid description of reality and the work of chartists is of no real significance in stock price analysis. In practice, it has been observed that markets are not fully efficient in the semi-strong or strong sense.

Inefficiencies and imperfections of certain kinds have been observed in the studies conducted so far to test the efficiency of the market. Thus, the scope of earning higher returns exists by using original, unconventional and innovative techniques of analysis. Also, the availability of inside information and its rational interpretation can lead to strategies for deriving superior returns.

In short, if these theories are taken in their strongest forms, fundamentalists say that a security is worth the present value (discounted) of a stream of future income to be received from the security; technicians assert that the price trend data should be studied regardless of the underlying data; efficient market theorists contend that a share of stock is generally worth whatever it is selling for.

There are four confusing terms which are appearing at this juncture-face value, book value; market value and intrinsic value. Let us first clarify all them.

Face value of the security is the denominating value. It is also called the nominal value. When we say that authorized share capital of a company is ₹ 200 lac divided into 20 lac shares of ₹ 10 each, we mean that the face value or the nominal value of the share is ₹ 10/- each.

The book value may be much more than the face value. Let us assume that the shares of ₹ 10/- each are issued at ₹ 30/- each. The issuer is charging a premium of ₹ 20/- for the intrinsic value equalization. The issuer normally charges premium for the following attributes:

- Long years of establishment and profitable track record.
- Leadership position in the market.
- Potential for continued growth in the future.
- Existence of free reserves with the issuer which makes the book value higher than the face value.

Case Study

Let us clarify the concept of book value a little further. Assuming that a company has been incorporated with an authorized capital of 2 crore shares of ₹ 10/- each and the company operates profitably for three years, the broad financial position of the company shall be as under:

(₹ *In lacs*)

Item	*Year 1*	*Year 2*	*Year 3*
Income	600	1,200	2,400
Expenditure	800	1,000	1600
Profit/Loss	(200)	200	800
Equity Capital	2,000	2,000	2,000
Free Reserves	– 200	0	800
Face Value/share	10	10	10
Book Value/share (Share capital + free reserves)	9	10	14

Book value of the share of the company became less than face value at the end of the first year due to the loss incurred by it. The book value was equal to the face value at the end of the second year due to recoupment of the loss. At the end of the third year the book value become ₹ 14/- due to building up of reserves. If, after the end of the third year the issuer wishes to come up with an offering of additional shares, the offer price will not be less than ₹ 14.

In actual market conditions does the book value track the market value? We may observe the trend of few company

Sl. No.	*Name of the Company*	*Face ValuePer Share*	*Book Value*	*Market Value(As on 30 September)*
(1)	*(2)*	*(3)*	*(4)*	*(5)*
1	HB Ltd.	1	13.8	168.70
2	FI Ltd.	10	136.3	250.50
3	IT Ltd.	5	314.3	3411.30

Sl. No.	Name of the Company	Face ValuePer Share	Book Value	Market Value(As on 30 September)
4	ITB Ltd.	10	175.8	349.80
5	BIS	10	299.3	229.70
6	RP Ltd.	10	20.4	22.60
7	RL Ltd.	10	138.2	562.60
8	IDD Ltd.	10	101.9	144.85
9	MTGL Ltd.	10	151.2	109.50
10	SC Ltd.	2	61.4	210.70
11	RLD Ltd.	5	190.5	821.15
12	HCT Ltd.	2	60.5	205.90
13	HPC Ltd.	10	173.8	172.45
14	CIP Ltd.	10	152.8	946.35
15	NES Ltd.	10	27.5	565.85
16	HH Ltd.	2	34.3	248.75
17	TISC Ltd.	10	93.6	116.50
18	LCET Ltd.	10	77.1	129.15
19	T&L Ltd.	10	133.0	167.00
20	BA Ltd.	10	283.2	380.05
21	BHL Ltd.	10	182.6	160.15
22	HIND Ltd.	10	621.5	522.10
23	ZTE Ltd.	1	99.2	57.50
24	BSS Ltd.	10	194.3	216.20
25	GRA Ltd.	10	295.3	309.00
26	GSIM Ltd.	10	75.3	367.15
27	GLX Ltd.	10	155.14	163.00
28	ASC Ltd.	10	171.17	138.15
29	CAS Ltd.	10	32.1	189.80
30	CIG Ltd.	10	18.2	131.20

We note that the market value is not equal to the book value for shares of any of the leading companies of the country. In fact, there is wide divergence between these two. The divergence is mostly on the upper side except in some cases. We can conclude, therefore, that book value is not a perfect indicator of the intrinsic value of a security. At best it can be an indicator of the floor value or base value below which the market value in normal circumstances should not slide. Book value is a historic indicator. It depicts what the company has earned and saved in the past. It does not reflect the future earning potential of the company.

Having considered that the book value is not an appropriate measure for ascertaining the real or intrinsic value of a security, let us take up a more rigourous process of evaluating securities called fundamental analysis.

FUNDAMENTAL APPROACH TO VALUATION

The investor seeks to arrive at the real value or the intrinsic value of a security through the process of security analysis. This value is arrived at by using a number of tools of financial analysis and it approximates the level at which the demand and supply of stock of the security would be in equilibrium leading to stability of prices. Price of the security below and above this level would tend to be unstable.

Money has a "time value." the powerful tools of compounding and discounting can help us build a theoretical framework of valuation of bonds and stocks. Bond values are reasonably easy to determine. As long as a bond is not expected to go into default, the value of the bond is made up of present values of annual interest payments plus the principal amount to be recovered at maturity or sooner. Valuation of equity is different because earnings and dividend streams are uncertain as to timing of receipt and the amount of dividend. The value of an equity stock at any moment in time can be thought of as the discounted value of a series of uncertain future dividends that may grow or decline at varying rates over time.

It is easiest to start with equity valuation where the expected holding period is one year. The benefit any investor receives from holding an equity stock consists of dividends plus any change in price during the holding period. Suppose we buy one share of SBI at the beginning of the year for Rs. 500. We hold the stock for one year. Rs.20 in dividends is collected at year-end, and the share is sold for Rs.530. the rate of return achieved is the composite of dividend yield and change in price (capital gains yield). Thus, we get

Dividend yield = D/P= 20/500 = .04 Capital gains yield = 530-500/500= .06

The total rate of return achieved is .04+.06=.10 or 10 percent. How might we express this same notion in terms of present values? Thus:

$$P0 = \frac{D1}{(1+r)} + \frac{P1}{(1+r)}$$

where:

D1 = dividend to be received at the end of year 1

r = investor's required rate of return or discount rate P1 = selling price at the end of year 1

P0 = selling price today

Therefore,

$$500 = \frac{₹\ 20}{(1+r)} + \frac{530}{(1+r)}$$

Will r = .10 balance the equation? At a required rate of return of 10 percent, the dividend is worth ₹18.18 (₹20*.909) and selling price has a present value of ₹ 481.8182 (₹530 *.909) (see present value table). The combined present value is ₹ 500.

Should a rate of return of 15 percent have been required, the purchase price would have been too high at

₹ 500. (the dividend of ₹20 and selling price of ₹530 remains constant). To achieve a 15% return, the value of the stock at the beginning of the year would have had to be

P0 = (₹20/1.15) + (₹530/1.15)

= ₹17.39 + 460.87

= ₹ 478.26

An alternative approach would be to ask the question: at what price must we be able to sell the stock at the end of one year (if purchase price is ₹ 500 and the dividend is ₹ 20) in order to attain a rate of return of 15 percent?

₹ 500 = (₹20/1.15) + (P1/1.15)

₹ 500 = ₹17.39 + .87 P1

₹ 554.72 = P1 (selling price)

Now let us look at a multiple year holding period. In most cases dividends will grow from year to year. We can similarly add the present value of all dividends to be received over the holding period and the present value of the selling price of the stock to the end of the holding period to arrive at the present value of the stock.

To simplify, let us assume that dividends will grow at the constant rate into the indefinite future. Under this assumption the value of a share is

$$P_0 = \frac{D(1+g)}{(1+r)^1} + \frac{D(1+g)^2}{(1+r)^2} + \frac{D(1+g)^3}{(1+r)^3} + \frac{+D(1+g)^n}{(1+r)^n}$$

where n approaches infinity, this equation reduces simply to

$$P_0 = \frac{D1}{r - g}$$

This model states that the price of a share should be equal to next year's expected dividend divided by the difference between the appropriate discount rate for the share and its expected long term growth rate. Alternatively, this model can be stated in terms of the rate of return on an equity share as

r = (D1/P0) + g

Illustration: An investor is holding 1000 shares of Right Choice Ltd. The current rate of dividend paid by the company is ₹ 5/- per share. The long term growth rate is expected to be 10% and the expected rate of return is 19.62%. We need to find out the current market price of the share:

Solution

$$P_0 = \frac{D0\,(1+g)}{r - g}$$

$$= \frac{5(1 + 0.10)}{.1962 - .10}$$

$$\frac{5 \times 1.1}{0.0962} = \frac{5.5}{0.0962} = ₹57.17$$

The real value or intrinsic value is valid for a given set of conditions. These conditionalities include the national and international economic situation, industry specific and company specific circumstances. The first three conditionalities are viewed from a macro perspective in order to even out the effect of minor happenings. The last conditionality is observed at the micro level because at this level, even relatively smaller happenings can disturb the demand supply equilibrium.

ALTERNATIVE APPROACHES TO VALUATION

1. Random walk theory

In the Fundamental Analysis, factors such as economic influences, industry factors and particular company information are considered to form a judgment on share value. On the other hand, price and volume information is analyzed in Technical Analysis to predict the future course of share values. There is another approach which negates both Fundamental and Technical analysis. This approach has been based upon the research aimed at testing whether successive price changes are independent in different forms of market efficiency.

According to the theory, share prices will rise and fall on the whims and fancies of manipulative individuals. As such, the movement in share values is absolutely random and there is no need to study the trends and movements prior to making investment decisions. No sure prediction can be made for further movement or trend of share prices based on the given prices as at a particular moment. The Random Walk Theory is inconsistent with technical analysis. Whereas, it states that successive price changes are independent, the technicians claim that they are dependent. But believing in random walk does not mean that one should not believe in analyzing stocks. The random walk hypothesis is entirely consistent with an upward and downward movement in price, as the hypothesis supports fundamental analysis and certainly does not attack it.

One of the advantages of this theory is that one is not bothered about good or bad judgement as shares are picked up without preference or evaluation. It is easier for believers in this theory to invest with confidence. The second advantage is that there is no risk of being ill informed while making a choice as no information is sought or concealed.

Random walk theory implies that short term price changes i.e day to day or week to week changes are random but it does not say anything about trends in the long run or how price levels are determined.

2. Efficient – Market Theory

Efficient Market Hypothesis accords supremacy to market forces. A market is treated as efficient when all known information is immediately discounted by all investors and reflected in share prices. In such a situation, the only price changes that occur are those resulting from new information. Since new information is generated on a random basis, the subsequent price changes also happen on a random basis. Major requirements for an efficient securities market are:

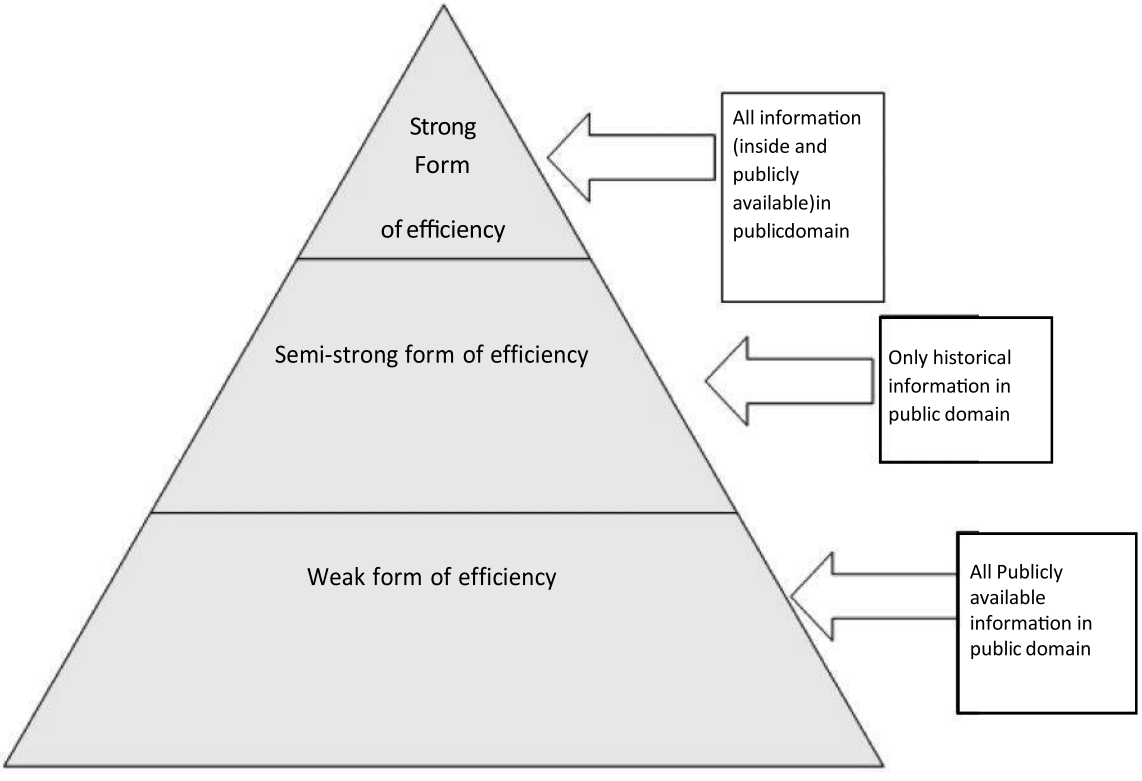
- Prices must be efficient so that new inventions and better products will cause a firms' securities prices to rise and motivate investors to buy the stocks.
- Information must be discussed freely and quickly across the nations so that all investors can react to the new information.
- Transaction costs such as brokerage on sale and purchase of securities are ignored.
- Taxes are assumed to have no noticeable effect on investment policy.
- Every investor has similar access to investible funds at the same terms and conditions.
- Investors are rational and make investments in the securities providing maximum yield.

Research studies devoted to test the random walk theory on Efficient Capital Market Hypothesis (ECMH) are put into three categories i.e.

(a) the strong form,

(b) the semi-strong form, and

(c) the weak form theory.



(a) ***The Strong Form of Efficiency:*** This test is concerned with whether two sets of individuals – one having inside information about the company and the other uninformed could generate random effect in price movement. The strong form holds that the prices reflect all information that is known. It contemplates that even the corporate officials cannot benefit from the inside information of the company. The market is not only efficient but also perfect. The findings are that very few and negligible people are in such a privileged position to have inside information and may make above-average gains but they do not affect the normal functioning of the market.

(b) ***Semi-strong form of Efficiency:*** This hypothesis holds that security prices adjust rapidly to all publicly available information such as functional statements and reports and investment advisory reports, etc. All publicly available information, whether good or bad is fully reflected in security prices. The buyers and sellers will raise the price as soon as a favourable price of information is made available to the public; opposite will happen in case of unfavourable piece of information. The reaction is almost instantaneous, thus, printing to the greater efficiency of securities market.

(c) ***The Weak Form theory:*** This theory is an extension of the random walk theory. According to it, the current stock values fully reflect all the historical information. If this form is assumed to be correct, then both Fundamental and Technical Analysis lose their relevance. Study of the historical sequence of prices, can neither assist the investment analysts or investors to abnormally enhance their investment return nor improve their ability to select stocks. It means that knowledge of past patterns of stock prices does not aid investors to make a better choice. The theory states that stock prices exhibit a random behaviour.

In this way, if the markets are truly efficient, then the fundamentalist would be successful only when (1) he has inside information, or (2) he has superior ability to analyse publicly available information and gain insight into

the future of the company. The empirical evidence of the random walk hypothesis rests primarily on statistical tests, such as runs test, correlation analysis and filter test. The results have been almost unanimously in support of the random walk hypothesis, the weak form of efficient market hypothesis.

3. Capital Asset Pricing Mode (CAPM)

CAPM explains the relationship between the Expected Return, Non-Diversifiable Risk (Systematic Risk) and the valuation of securities. Under CAPM price of a security is calculated with the help of expected return from security.

Formula for Computing Expected Return: E(RP) = Rf +(Rm –Rf {ß} Where E(RP) = Expected Return on Portfolio

RF = Risk Free Rate of Interest/ Return ß = Portfolio Beta

RM = Expected Return on Market Portfolio

Example 1: Using the following information calculate expected return:

Current yield on a U.S. 10-year treasury is 2.5%

The average excess historical annual return for U.S. stocks is 7.5%

The beta of the stock is 1.25

Solution: Expected return = Risk Free Rate + [Beta x Market Return Premium]

Expected return = 2.5% + [1.25 x 7.5%]

Expected return = 11.9%

Example 2: Winner Corporation stock will pay a dividend of $1.32 next year. Its current price is $24.625 per share. The beta for the stock is 1.35 and the expected return on the market is 13.5%. If the riskless rate is 8.2%, what is the expected growth rate of Winner Corporation?

Solution: Using the capital asset pricing model (CAPM),

E(Ri) = r + i [E(Rm) − r]

We first find the expected rate of return as:

E(Ri) = 0.082 + 1.35 [0.135 − 0.082] = 0.15355 = R

The expected rate of return E(Ri), for a security is also its required rate of return R by the investors. Using the growth model for a stock

$$P_0 = \frac{D_1}{R - g}$$

we get, $R - g = D_1/P_0$, or $g = R - D_1/P_0$,

which gives g = 0.15355 − 1.32/24.625 = 0.1.

Thus the growth rate is 10%

Example 3: Peak Services Ltd. common stock has a = 1.15 and it expects to pay a dividend of $1.00 after one year. Its expected dividend growth rate is 6%. The riskless rate is currently 12%, and the expected return on the market is 18%. What should be a fair price of this stock?

Solution: E(Ri) = r + i [E(Rm) − r]

we get E(Ri) = 0.12 + 1.15 [0.18 − 0.12] = 0.189

Thus, the expected return on the stock is 0.189, and the expected growth rate is 0.06.

$$P_0 \quad \frac{1}{0.189 - 0.06} = \$7.75$$

Example 4: Wonderful Oil stock currently sells at $120 a share. The stockholders expect to get a dividend of $6 next year, and they expect that the dividend will grow at the rate of 5% per annum. The expected return on the market is 12% and the riskless rate is 6%. Wonderful Oil announced that it has won the multimillion dollar navy contract, and in response to the news, the stock jumped to $125 a share. Find the beta of the stock before and after the announcement.

Solution: Using Gordon's growth model, $P_0 = D_1 / R - g$, we get $R = D_1/P_0 + g$, which is also the expected return on the stock, E(R). But by CAPM,

$E(Ri) = r + i [E(Rm) - r]$

we get

$$\beta = \frac{E(R_i) - r}{E(R_m) - r}$$

$$\text{Thus, } \beta = \frac{D_1 / P_0 + g - r}{E(Rm) - r}$$

$$\frac{D_1 / P_0 + g - r}{E(Rm) - r}$$

$$\beta = \frac{6 /120 + 0.05 - 0.06}{0.12 - 0.06} = 0.667, \text{ before.}$$

$$\text{And } \beta = \frac{6/125 + 0.05 - 0.06}{0.12 - 0.06} = 0.633, \text{ after.}$$

Note : Detailed discussion on CAPM model is given in Portfolio Management.

Lesson Round up

- Investment may be defined as a conscious act on the part of a person that involves deployment of money in securities issued by firms with a view to obtain a target rate of return over a specified period of time.
- Investment is conscious act of deployment of money in securities issued by firms. Speculation also involves deployment of funds but is not backed by a conscious analysis of pros and cons.
- Investment is the employment of funds on assets with the aim of earning income or capital appreciation.
- Speculation also involves deployment of funds but it is not backed by a conscious analysis of pros and cons.
- Both gambling and betting are games of chance in which return is dependent upon a particular event happening.

- Risk in security analysis is generally associated with the possibility that the realized returns will be less than the returns that were expected.
- Risk can be classified under two main groups, viz., systematic risk and unsystematic risk.
- Return is the primary motivating force that drives investment. It represents the reward for undertaking investment.
- The main objective of security analysis is to appraise are intrinsic value of security.
- The Fundamental approach suggests that every stock has an intrinsic value which should be equal to the present value of the future stream of income from that stock discounted at an appropriate risk related rate of interest.
- Technical approach suggests that the price of a stock depends on supply and demand in the market place and has little relationship with its intrinsic value.
- Efficient Capital Market Hypothesis (ECMH) is based on the assumption that in efficient capital markets prices of traded securities always fully reflect all publicly available information concerning those securities.
- Performance of a company is intimately related to the overall economic environment of the country because demand for products and services of the company would under normal circumstances be directly related to growth of the country's economy.
- Industry level analysis focuses on a particular industry rather than on the broader economy.
- Dow Jones theory shows that share prices demonstrate a pattern over four to five years and these patterns can be divided into primary, secondary and minor trends.
- Charts and Indicators are two major tools of Technical Analysis.

GLOSSARY

Security Analysis : Security analysis refers to the method of analyzing the value of securities like shares and other instruments to assess the total value of business which will be useful for investors to make decisions. There are three methods to analyze the value of securities – fundamental, technical, and quantitative analysis.

Quantitative Analysis: Quantitative analysis refers to the analysis of securities using quantitative data.

Portfolio Theory : Portfolio theory was proposed by Harry M. Markowitz of University of Chicago. According to Markowitz's portfolio theory, portfolio managers should carefully select and combine financial products on behalf of their clients for guaranteed maximum returns with minimum risks.

Alpha : The amount of return expected from an investment from its inherent value.

Annualized : A procedure where figures covering a period of less than one year are extended to cover a 12-month period.

Annualized rate of return : The average annual return over a period of years, taking into account the effect of compounding. Annualized rate of return also can be called compound growth rate.

Appreciation : The increase in value of a financial asset.

Asset allocation : The process of dividing investments among cash, income and growth buckets to optimize the balance between risk and reward based on investment needs.

Asset class : Securities with similar features. The most common asset classes are stocks, bonds and cash equivalents.

Average maturity : For a bond fund, the average of the stated maturity dates of the debt securities in the portfolio. Also called average weighted maturity. In general, the longer the average maturity, the greater the fund's sensitivity to interest-rate changes, which means greater price fluctuation. A shorter average maturity usually means a less sensitive - and consequently, less volatile - portfolio.

Bear market : A bear market is a prolonged period of falling stock prices, usually marked by a decline of 20% or more. A market in which prices decline sharply against a background of widespread pessimism, growing unemployment or business recession. The opposite of a bull market.

Benchmark : A standard, usually an unmanaged index, used for comparative purposes in assessing performance of a portfolio or mutual fund.

Beta : A measurement of volatility where 1 is neutral; above 1 is more volatile; and less than 1 is less volatile.

Blue chip : A high-quality, relatively low-risk investment; the term usually refers to stocks of large, well-established companies that have performed well over a long period. The term Blue Chip is borrowed from poker, where the blue chips are the most valuable.

Capitalization : The market value of a company, calculated by multiplying the number of shares outstanding by the price per share.

Cash equivalent : A short-term money-market instrument, such as a Treasury bill or repurchase agreement, of such high liquidity and safety that it is easily converted into cash.

Equity fund : A mutual fund/collective fund in which the money is invested primarily in common and/or preferred stock. Stock funds may vary, depending on the fund's investment objective.

Expense ratio : The ratio between a mutual fund's operating expenses for the year and the average value of its net assets.

Green bonds : A type of fixed-income instrument that is specifically earmarked to raise money for climate and environmental friendly projects.

Green Bond Principles : Voluntary process guidelines that recommend transparency and disclosure and promote integrity in the development of the Green Bond market by clarifying the approach for issuance of a Green Bond.

Growth stock : Typically a well-known, successful company that is experiencing rapid growth in earnings and revenue, and usually pays little or no dividend.

Impact investing : A sustainable investment style that seeks to generate measurable positive social or environmental impact alongside financial return. Investment themes include activities such as affordable housing, education and healthcare.

Investment stewardship : Engaging with companies and voting proxies to ensure our clients' interests are represented and protected and the company is focused on responsible allocation of capital and long-term value creation.

Horizontal Analysis : Horizontal analysis is used in financial statement analysis to compare historical data, such as ratios, or line items, over a number of accounting periods. Horizontal analysis can either use absolute comparisons or percentage comparisons, where the numbers in each succeeding period are expressed as a percentage of the amount in the baseline year, with the baseline amount being listed as 100%. This is also known as base-year analysis.

Vertical Analysis : Vertical analysis is a method of analyzing financial statements that list each line item as a percentage of a base figure within the statement. The first line of the statement always shows the base figure at 100%, with each following line item representing a percentage of the whole. For example, each line of an income statement represents a percentage of gross sales, while each line of a cash flow statement represents each cash inflow or outflow as a percentage of total cash flows.

TEST YOURSELF

(These are meant for re-capitulation only. Answers to these questions are not to be submitted for evaluation)

1. What is security analysis? Why do we need to carry it out?
2. What are the various kinds of risks?
3. What are the various techniques of security analysis?
4. Describe some techniques of Technical analysis.
5. A Ltd has just declared a dividend of ₹10 per share. (Dividend ratio 100%)The ROE of the company is 20%, while EPS has been ₹40 per share. If the Investor required rate of return is 20%, then what should be the price per share?

   (Answer: ₹230 per share)
6. The analysts are of view that company YZ Ltd equity share will give a return of 20% if the economy grows at a faster pace. If the economy stays at the same rate of growth as in present times, then the equity share is expected to give the return of 10% only. If the economic growth rate goes down the expected return of the share is only 5%. The analysts further estimate that the probability of good, status quo and recession of economy are:- 50%,30% &20%. What is the average return of YZ Ltd equity share?

   (Answer: 14%)

LIST OF FURTHER READINGS

1. Security Analysis and Portfolio Management, 2nd Edition by Pandian Punithavathy
2. Security Analysis and Portfolio Management by Donald E. Fischer and Ronald J. Jordan
3. Security Analysis and Portfolio Management by Ambika Prasad Dash

OTHER REFERENCES

1. Security Analysis: An Investment Perspective, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3415546
2. https://www.researchgate.net/publication/5189934_The_Valuation_of_Security_Analysis
3. http://ssijmar.in/vol2no5/vol2%20no5.10.pdf
4. Fundamental Analysis: Combining the Search for Quality with the Search for Value, https://www.wm.edu/offices/auxiliary/osher/course-info/classnotes/shanecontemporaryaccountingresearch.pdf