

**PAPER: SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT
DSE 306B**

MODULE 1: SECURITY ANALYSIS

DR. M.N.ROY

Syllabus and Lecture Plan

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11. Concept of beta and Volatility in Return of Equity (show calculations)	
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Suggested Books

1. Chandra, P. Investment Analysis and Portfolio Management, Tata McGraw Hill.
2. Elton, Gruber, Brown and Goetzmann, Modern Portfolio Theory and Investment Analysis, John Wiley & Sons.
3. Fabozzi, F.J., Investment Management, Prentice Hall.
4. Fischer and Jordan, Security Analysis and Portfolio Management, Prentice Hill.
5. Jones, C.P., Investments - Analysis and Management, John Wiley & Sons.
6. Sharpe, Alexander and Bailey, Investments, Prentice Hall.

STUDY MATERIAL

Equity Valuation

- (a) Dividend capitalization method
- (b) Relative valuation method

Dividend capitalization method

Dividends are perpetual payments to the equity shareholders. The intrinsic value of the equity shares can be calculated as follows:

$$V_0 = \sum_{t=1}^n \frac{D_t}{(1+r)^t} + \frac{P_n}{(1+r)^n}$$

The aforesaid model is appropriate if the company pays different dividend in different financial years. However, the company may follow a constant growth in their dividend over their operation or estimate a supernatural growth for initial few years followed by normal growth rate. Hence, it is necessary to estimate the expected dividend payable in the next financial year, expected growth rate, the growth schedule and the capitalization rate.

Expected dividend

Expected dividend is estimated based on the dividend payout ratio determined based on the dividend policy of the Government

Expected growth rate and growth schedule

Expected growth rate and growth schedule can be determined based on expected increase in EPS in near future. There are 2 methods for that:

- (a) Market share to profit margin approach
- (b) FSA approach

In the first approach, Expected EPS = (Expected industry sales x expected market share x expected profit margin) / No. of equity shares

Expected industry sales can be calculated based on industry analysis subject to some anticipated changes. Estimated market share is the average of last 3-5 years of market share subject to significant steps taken by the company to improve market share in future. Estimated profit margin is also an average of last 3-5 years subject anticipated changes in production or operating efficiency, financial leverage and corporate tax rate.

In the second approach, $EPS = [(EBIT - iD) (1-T) - dP] / N$

Or, $NW[r + (P/NW) + D/NW (r-i)] (1-T) - dP / N [EBIT = r^*A (NW + D + P)]$

EPS is a function of

- (a) Book value of equity share (NW/N) (positive relationship with EPS)
- (b) Debt equity ratio (D/NW) (positive relationship with EPS)
- (c) Preference capital to equity ratio (P/NW) (positive relationship with EPS)
- (d) Spread of ROA and interest on debt (r-i) (positive relationship with EPS)
- (e) Tax rate (T) (positive relationship with EPS)
- (f) Preference dividend (dP) (positive relationship with EPS)

All the aforesaid factors can be estimated by adjusting their historical values with anticipated change. EPS can also be represented in terms of profitability, efficiency, leverage, asset utilization, and book value of equity

$EPS = PAT/N = PAT/NW (ROE) \times NW/N (book\ value\ of\ equity) = PAT/TA (ROA) \times TA/NW (leverage) \times NW/N (book\ value\ of\ equity) = PAT/S (profitability) \times S/TA (asset\ turnover) \times TA/NW (leverage) \times NW/N (book\ value\ of\ equity) = PAT/EBIT (profitability) \times EBIT/S (efficiency) \times S/TA (asset\ turnover) \times TA/NW (leverage) \times NW/N (book\ value\ of\ equity)$

Expected capitalization rate

With a view to estimating the capitalization rate, the business needs to estimate risk of investing in their securities. Since, systematic risk (comprising market risk, interest rate risk and inflation risk) in non-

diversifiable, the businesses should consider only the unsystematic risk (comprising business and financial risk). While business risk determines volatility in earnings due to operational factors, financial risk refers to risk due high financial leverage (high DE ratio). Hence, with a view to estimating the expected capitalization rate or required rate of return, it is necessary to estimate appropriate risk premium (Average return of the security – risk free rate). Hence, the companies in the market should be classified in different risk class (mainly industry wise) and their risk premium may be calculated. However, the company specific factors, such as size or capital structure are ignored in such mechanism. Hence, capitalization rate is determined based on constant growth model as follows:

$K_e = D_1 / P_0$ (dividend yield) + g (CAGR of dividend payments over a long period).

However, CAGR may not be a right approach if the company pays erratic dividends. In that case SGR may be used as growth. On the other hand, dividend yield may be calculated as an average of last few years. It may also be estimated based on a regression model of historical data with dividend yield as the DV and mean dividend payout ratio, forecasted short run earnings growth rate, forecasted long term dividend growth rate, historical earnings variability and historical earnings growth rate as IVs.

Models of DCM

1. Gordon model

$$V_0 = \frac{D_0(1+g)}{r-g} = \frac{D_1}{r-g}$$

The model assumes constant growth over a long term. The model has following limitations:

- The model is limited to the firm growing at stable rate. However, that is an unrealistic assumption since as the firm grows, its dividend grows at a faster rate than its earnings.
- If the growth rate is equal to the required rate of return, the value of the stock reaches infinity. If the growth rate is more than the capitalization rate, the value of the stock becomes negative. Both of these are unrealistic. Real growth of the firm cannot be more than real growth rate of the economy by 1-2%. Hence, in such case, the firm may have to opt for multiple growth models.

2. 2-stage model

The model assumes 2-stages of growth. In the first stage, dividend grows at a super-natural rate for 'n' years. In the 2nd stage, the dividend grows at a normal rate for forever.

$$V_0 = \sum_{t=1}^n \frac{D_0(1+g_S)^t}{(1+r)^t} + \frac{D_0 \times (1+g_S)^n \times (1+g_L)}{(1+r)^n \times (r-g_L)}$$

2-stage model has following limitations:

- It is very difficult to calculate the super-normal growth period since it is based on product life cycle or project opportunities. It is difficult to convert those qualitative issues in quantitative terms. As the growth period influences intrinsic value, its calculation is very important.
- The sudden change from super-normal growth to normal growth is very unrealistic. There should be gradual decrease in the growth rate.
- The terminal value of this model suffers from the limitations of Gordon model.

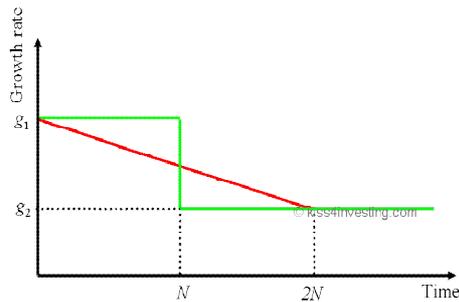
The model is appropriate for firms earning a modest growth during initial years of their operations. Determinants of this model are the following:

- If the length of the supernormal growth period is high, the intrinsic value of share is high
- If the supernormal growth rate is high, the intrinsic value of share is more
- If the projects are more profitable, it will result in higher growth resulting in higher intrinsic value
- If the projects are risky, it will result in high capitalization rate, resulting in less share price.

3. H-model

The model is similar to 2-stage model. However, a gradual change in growth is assumed here instead of a sudden change. It is best suited for those firms who have high growth at the beginning and low growth subsequently. The assumptions of the model:

- Growth starts at a high level and continuously fall over a period, ultimately stabilizing at a stable rate
- DP ratio remains same during the shifting growth phase.



$$V_0 = \frac{[D_0 \times (1 + g_L)] + [D_0 \times H (g_S - g_L)]}{r - g_L}$$

The model is limited by the fact that the growth follows a linear decline over the supernormal growth period. It is not practically feasible due to unpredictable business conditions. In addition to that, as growth rate follows, DP ratio is bound to increase. But here DP ratio is constant.

4. 3-stage model

The model is applicable to those firms who have high growth in initial period, then declining growth in the subsequent period and stable growth forever. This model does not put any restriction in terms of payout ratio. Hence, in this model, in the first stage, we see low DP ratio, in the second stage, we see increasing DP ratio and in the third stage, we see high DP ratio.

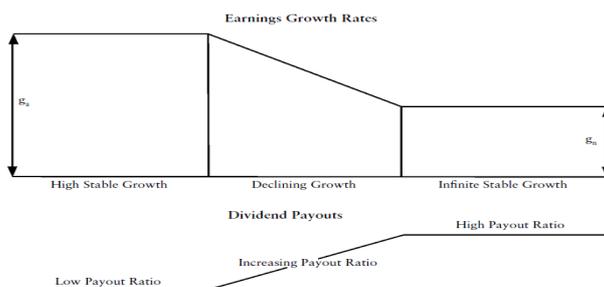


FIGURE 13.5 Expected Growth in the Three-Stage Dividend Discount Model

Bond Valuation

Meaning and Types of Bond

Public bonds are long term fixed obligation debt securities packaged in convenient and affordable denominations for sale to individuals and financial institutions. They differ from individual mortgage or private placement since they are issued to the public rather than channeled to a single lender. It is a fixed obligation security since it the financial obligation of the issuer on the bond is fixed. Technically the issuer agrees to pay the holder a fixed periodic payments and redemption of the principal amount at the end of the maturity period. Normally, interest on bond is paid in every 6 months. However, it may be low as monthly interval or high as yearly intervals. The bond has a specific term to maturity that determines its life. The public debt market is divided into 3 segments based on the maturity period – (a) money market (short term issues with maturities less than 1 year); (b) notes (intermediate issues with maturities between 1-10 years); (c) bonds (long term obligations with maturities exceeding 10 years). The lives of the debt obligations change continuously as the debt progresses towards maturity. Thus the securities which were outstanding in the secondary market will eventually enter into short term from the long term. The change in maturity is important since price of the bond depends upon the remaining life of the bond. A bond can be characterized by their (a) intrinsic feature; (b) types; (c) indenture provisions and (d) cash flows that affect price or maturity.

Intrinsic features

- The coupon, principal value, maturity and type of ownership are the major intrinsic features of a bond.
- Coupon is the income that the investors would receive over the holding period (life). This is also known as interest or nominal yield.

- The term to maturity specifies the date or the number of years before the bond matures. There are two different types of maturity: (a) term bond (has a single maturity date); (b) serial obligation bond (has a series of maturity date). In case of serial obligation bond, each maturity is a subset of the total issue considered as a small bond issue with different coupon payments. Municipalities issue this kind of bond.
- Principal or par value is the original value of the obligation. Par value is not same as that of the market value. Market prices may differ from the par-value due to their coupon rate and market rate of interest. If the market rate of interest is more than the coupon rate, bond will be sold at a discount and vice versa. If the coupon rate and market interest rate are comparable, then market value is close to its par value.
- Bonds differ in terms of their ownership. In case of bearer bond, the holder or bearer is the owner. Hence, the issuer keeps no record of ownership. In case of this bond, the coupons are required to be sent to the issuer for payment. On the other hand, in case of registered bond, the issuer keeps the record of the owners and pays the interest directly to them.

Types of issue

- In contrast to the common stock, a company may have different types of bonds outstanding at a particular time. These bonds may have different types of collateral can be senior, unsecured and subordinated securities.
- Secured bond are backed by a legal claim on a specified property of the issuer (e.g. mortgage bonds are secured by real estate assets; equipment trust certificate mainly used by rail-roads and airlines uses equipments of the company as collateral)
- Unsecured bonds are backed by the promise made by the issuer that the interest and the principal will be paid on a timely basis. In fact, they are secured by the general creditability of the issuer.
- Subordinate debenture possesses a claim on income and assets that is subordinated to other debentures. In case of income issues, the coupon is paid only if the income on the subordinated assets is earned. While they are less popular in corporate sector, they are highly used in municipal sector where they are known as revenue bond.
- Refunding bond normally provide fund to retire another debenture prematurely.
- The type of issue has marginal effect on the comparative yield, since bond quality mainly depends upon the credibility of the issuer. A study of bond price behaviour revealed that collateral does not become important in bond issue, unless it approaches default. The collateral and security characteristics of the bond influence its quality and thereby influences yield differentials.

Indenture provisions

Indenture is a legal contract between issuer and holder specifying issuer's legal requirement. A trustee (bank) working in favor of the holder ensures that the indenture provisions are met in terms of payment of interest and principal. All the factors that set forth its features, type and maturity are mentioned in the indenture.

Features affecting bond's maturity

- Investors should be aware of three call features of a bond that may affect its maturity. They are: (a) freely callable (call can be exercised any time during the maturity with a notice of 30-60 days); (b) non-callable (the issuer cannot retire the bond before its maturity); (c) deferred (call cannot exercised before a particular period say 5-10 years at the end of which the bond becomes freely callable). Callable bonds have call premium which must be paid to the holder as a compensation for retiring the bond prematurely.
- A non-refunding provision prohibits call and premature retirement of a bond by funding it by lower-coupon bond. This is meant to protect the bondholder from a typical refunding, but it is not foolproof. In such a case, the call can be made from excess cash from operation, sale of assets, proceeds from sale of common stock. A lot of calls were exercised from these sources during 1980-1990 since it was considered as good financing decisions.
- Another indenture provision that determines bond maturity is sinking fund where the maturity value of the bond is paid off systematically over the maturity period. There are several sinking fund arrangements that may change the maturity of the bond. The sinking fund amount can be fixed or variable (% of given issue or total debt outstanding). Just like call, SF payments may start from first year or may be deferred to 5-10 years. In case of SF too, a premium is added with the maturity value. However, the premium percentage is less than that of call premium. SF has little impact on comparative yields and subsequent price behaviors. It is an obligation and must be carried out irrespective of the market conditions. While SF allows an issuer to call bonds at random basis, most of

the bonds under this system are retired by direct negotiation with the institutional investors. Actually, the trustee negotiates with the investors to buy back the bond at a price slightly above the market price.

Rate of return

It is calculated in the same way as that of stock or any other assets. It is determined by the beginning and ending price within the holding period. The main difference with stock is in case of stocks, the dividends may vary over time; while the interest income is contractual and accrues over a period of time.

$$\text{HPR}_{i,t} = \frac{P_{i,t+1} + \text{Int}_{i,t}}{P_{i,t}}$$

Holding period yield is HPR-1. The only contractual payment in the above equation is interest payments. The beginning price is determined by the market forces. The end price is also determined as per market forces if the bond is not held till maturity. Otherwise, the end price is the par value. Due to these price variations, the holder of bonds may have capital gains or losses. Interest rate volatility has increased since 1960 causing major price fluctuations. As a result capital gains or losses have become a major component for rate of return.

PRESENT VALUE MODEL OF BOND VALUATION

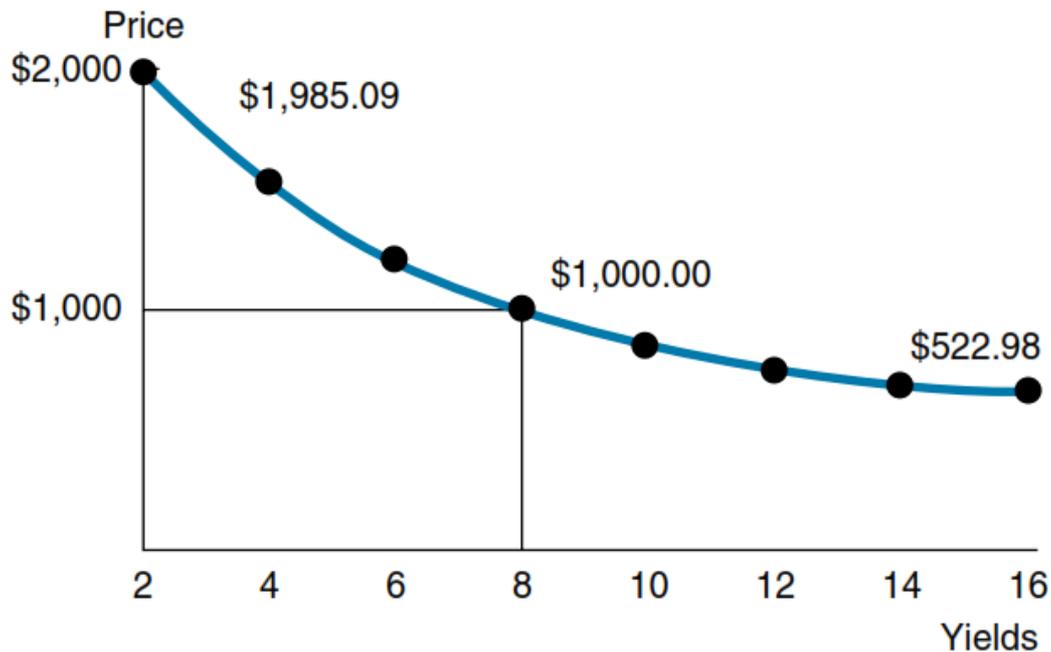
In this model, present value of future cash flow of a bond are discounted at the required rate of return. The future cash flow would incorporate annual or semi-annual interest payments and principal repayment at the end of the maturity period.

$$P_m = \sum_{t=1}^{2n} \frac{C_i/2}{(1+i/2)^t} + \frac{P_p}{(1+i/2)^{2n}}$$

The value would indicate the amount that the investor is willing to pay now covering risk-free return, risk of inflation and risk of the bond. The standard assumption is holding the bond till maturity. In that case, the number of period is the maturity of the bond and the cash flows would incorporate the annual interest payments and par-value principal payment at the end of the term. The model is same as that of NPV method of investment decision where present value of cash inflows is compared with the cash outflow. If the summated inflow is more than the outflow, the project is pursued and vice versa.

PRICE-YIELD RELATIONSHIP

If coupon rate, par-value and maturity are known, the only thing that influences the bond price is its yield or required rate of return. If the yield increases, the price falls. If the yield is below its coupon rate, then the bond is price at a premium to its par-value and the bond is at discount if the opposite takes place. The price-yield relationship is actually convex (shown in the chart). It means that when yield increases, price decreases at a decreasing rate and when yield declines, price increases at an increasing rate.



YIELD MODEL OF BOND VALUATION

Investors often price their bond on the promised rate of return based on certain assumptions. So far, cash flows and required rate of return have been used to evaluate the present value of the bond. With a view to evaluating yield on a bond, the current market price and expected cash flows are used. The equation is same as that of the present value model. But in that model, we did not know about the current value of the bond but knew about the required rate of return. But here we know the current price and have to compute the yield. If the computed promised yield is more than the required rate of return, then an investor buys the bond and vice versa. The model is same as that of IRR method of investment decision. If the IRR on a project is more than the cost of capital, then project is accepted and vice versa.

Nominal yield

It measures the coupon rate on the bond. It describes the coupon characteristics of a bond.

Current yield

It measures the current income on the bond. Nominal yield or current yield is not important for taking investment decisions.

$$CY = C_i / P_m$$

Since the yield measures current income in respect to its price, it is important for those investors who want current cash flows in return of their investment portfolio, e.g. retired person who lives on their current income. However, it is less important for other investors since it ignores the capital gain or loss in an investment.

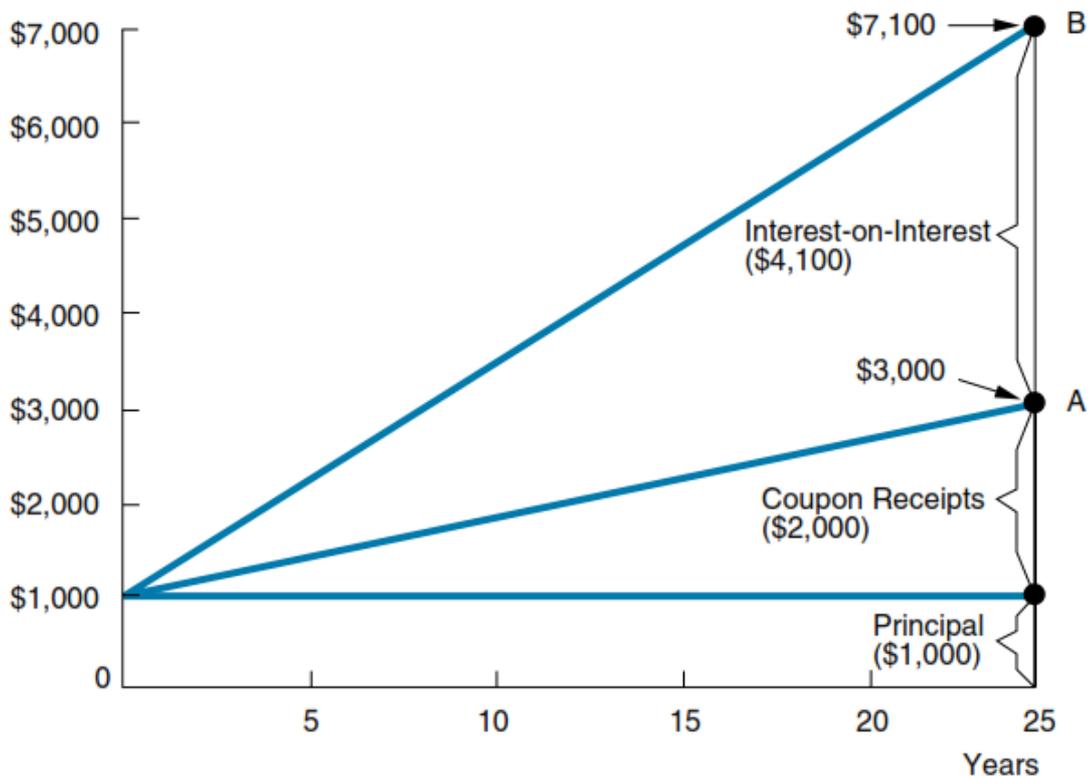
Yield to maturity (YTM)

It measures the estimated return of the bond if it is held till maturity. It is the most widely used yield. It measures the compounded rate of return on a bond, if the bond is purchased at prevailing price subject to fulfillment of the following assumptions: (a) the bond is held till maturity (hence the name YTM); (b) all invested cash flows are reinvested at calculated YTM. If the bond is held till maturity, YTM = RY. The calculation of YTM is implicit in the calculation of present value of the bond.

$$P_m = \sum_{t=1}^{2n} \frac{C_i/2}{(1+i/2)^t} + \frac{P_p}{(1+i/2)^{2n}}$$

When all the expected cash flows and par-value of the bond equates its present value, the discounting rate is the YTM. It is similar to the calculation of IRR. YTM is also known as promised yield since this return

will be provided to the investor, if the bond is held till maturity. If the coupon rates cannot be reinvested at YTM or some rate below YTM, then the realized yield will be below YTM. However, if the coupons are invested at a rate more than the YTM, RY will be greater than YTM. The income earned on the reinvestment of interim interest payment is known as interest-on-interest. The impact of reinvestment assumption on the actual return varies directly with coupon and maturity. A higher coupon or a higher maturity will make the loss from failure to invest at a reinvestment rate more crucial.



Sometimes, a high interest is referred to as a situation of high lock in. However, a high YTM also brings the problem of investing all the coupon payments at that high rate which may not always be possible. The YTM can be computed based on the present value model using a semi-annual compounding since the model gives the accurate result and is usually preferred by the investment professionals. The model is somewhat complex since it requires iteration. We normally use a trial-and-error method for finding out an approximate YTM. Sometimes, in some bond, there is only one cash inflow at the end of the maturity. They are called 0-coupon bonds.

Yield to call (YTC)

It is the estimated rate of return of the bond if it is held till the first call date. The measure is appropriate for certain callable bonds. If the bond with a call feature is selling for a price at premium ($>$ par) which is equal to or more than the call price of the bond, then the investors should measure the YTC on the bond rather than YTM. Market uses most conservative measures for valuing the bond. When the bond is trading at more than its call price + some premium based on the time on which the call was made, YTC provides the lowest yield measures. If the bond is trading at a price equal to its call price, it is called cross-over price. The rate at which $YTM = YTC$, is called crossover yield. If the bond price goes beyond this crossover price, it is profitable for the investor to exercise the call and finance the call by selling a new bond at the prevailing market price. Hence, YTC measures the return the investors will earn if he holds the bond till the first calls date, i.e. at the end of the deferred call period. If a particular bond has multiple call dates (the call prices at the later dates will be lower), then it will be necessary to find out the call at which the yield is worst. Investors must compute YTC after a number of high yielding and high coupon bonds are issued because after such period, interest rates will decline and bond prices will rise and high coupon bonds will have a higher probability of being called and the yield will be below crossover yield. YTC is calculated based on present value method with the assumption that the bond is held up to first call date and all coupon payments are reinvested at YTC.

$$P_m = \sum_{t=1}^{2nc} \frac{C_i/2}{(1+i/2)^t} + \frac{P_c}{(1+i/2)^{2nc}}$$

Realized yield

It measures the estimated rate of return if the bond is sold prior to its maturity. It considers specific reinvestment assumptions and estimated sales price. It can also measure the actual rate of return during some past period of time. It is most important for taking investment decisions. In this case, the investor holds the bond for a holding period which is less than the term. This yield measures the rate of return measurable from various trading strategies. While it is very useful, it requires several other estimates not required by other yields. The investor must estimate the future selling price at the end of the holding period. Also, the measure is required to estimate the reinvestment rate, the rate at which the coupons are reinvested before the bond is liquidated. Hence, this measure will help the investors to estimate the actual yield after selling the bond. The calculation of realized yield is actually variation in the present value for model for estimation of YTM.

$$P_m = \sum_{t=1}^{2hp} \frac{C_i/2}{(1+i/2)^t} + \frac{P_f}{(1+i/2)^{2hp}}$$

Expected cash flows from coupon payments and future selling price are equated to the current market price. In case of RY, it is assumed that coupon flows are discounted at RY. However, available market rates might be different from the RY. Hence, in order to estimate an appropriate RY, you may have to estimate an approximate reinvestment rate.

$$P_f = \sum_{t=1}^{2n-2hp} \frac{C_i/2}{(1+i/2)^t} + \frac{P_p}{(1+i/2)^{2n-2hp}}$$

The expected future price is not given; it may be calculated based on the aforesaid formula.

Technical Analysis

Meaning of technical analysis

Technical analysis involves examination of past price movements of a stock and predicting its price in the future and thereby deciding which stock to buy or sell and at what time. Technical analysis is fundamentally different from efficient market hypothesis (EMH) or fundamental analysis. EMH theories do not believe that past price performance is a good indicator of future price of a stock. On the other hand, fundamental analysis involves scrutinizing economic, industry and company information and coming up with the intrinsic value of the security and comparing it with actual market price. However, technical analyst would look at the past price trends and volume of transactions and formulate some technical rules for stock selection and identifying the appropriate time for entering into the market. The analysts also believe that change in price trends also influence change in earnings and risk even before it is perceived by the fundamental analyst. Truly speaking, technical analysis along with fundamental analysis may provide individual and institutional investors super-normal return.

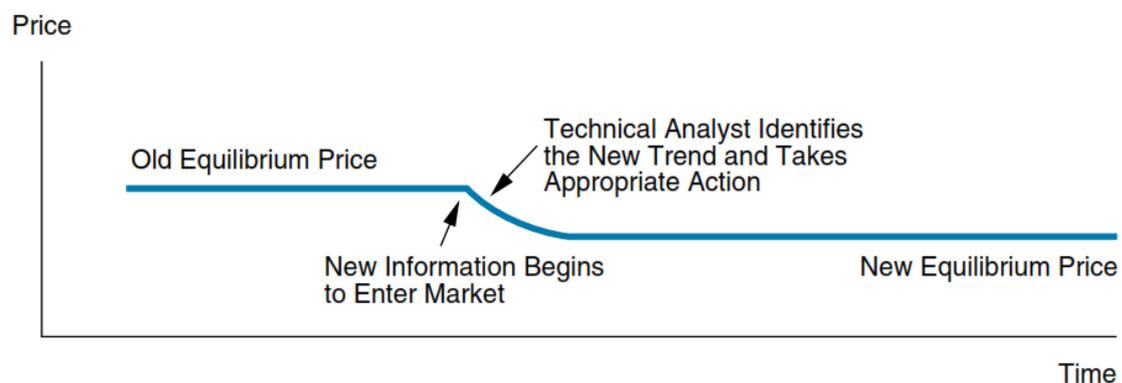
Premises of technical analysis

Technical analysts take their investment decisions based on past price movements and volume of trade. Their decision is based on certain assumptions:

1. Market price of the security is decided by the demand and supply forces of the market. This assumption is supported by fundamental analysts and efficient market theorists too.
2. The demand and supply of the security depends upon some rational and irrational factors. Rational factors include economic, industry and company factors that are supported by fundamental analysts and efficient market theorists. However, in addition to the rational factors, technical analysts also

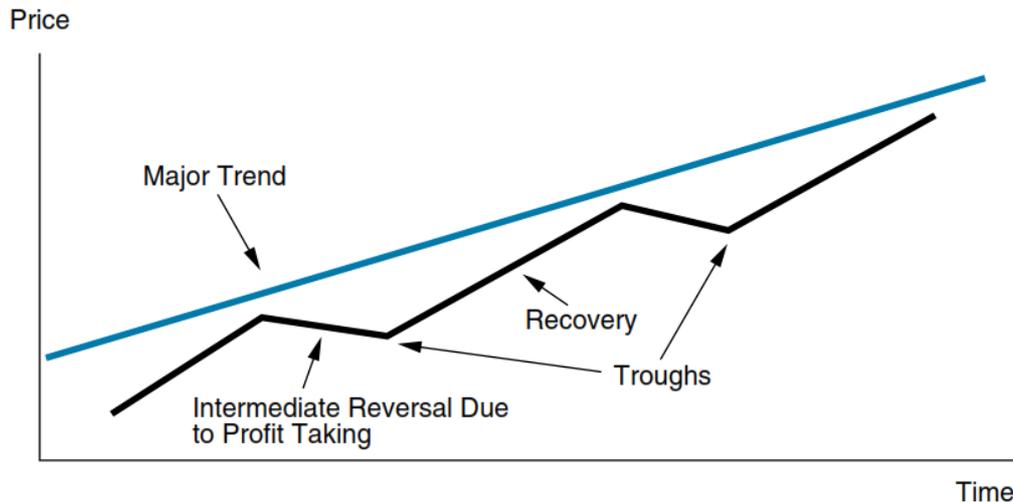
consider some irrational factors, such as moods, guesses and opinions of the investors that seem to influence the demand and supply forces.

3. Despite minor fluctuations, market price is assumed to follow a trend for a appreciable period of time.
4. Due to change in demand and supply conditions, the trend in the market price will change eventually. Market has a self-correcting nature of adjusting itself to the change. Fundamental analysts and efficient market theorists believe that the change in market price of a security due to inflow of new information is abrupt and instantaneous. However, technical analysts believe that the market takes time in absorbing such information because the information comes to the market from different sources and different investors perceive the information in different way. The way insiders and professional investors would react to new information; it may not be the same for an average investor. The equilibrium price in the market does not change suddenly but it changes over a period of time. Inflow of new information over a period of time results in gradual change in price. Old equilibrium price changes continuous unless a new equilibrium is reached. Hence, the existing trend of price would slowly change and new trend would set in. Technical analysts are not supposed to predict the new equilibrium price. However, they are supposed to identify this momentum of change. If the change of trend is upwards, they buy the security and vice versa.



Dow Theory

Dow Theory is one of the oldest theories evaluating price and volume trend in the market. Dow has defined the trends in the market which is similar to the trend of water. According to him, there are three types of trends in the market: (a) major trend or tide that dictate overall movement of price of a large period; (b) intermediate trend or waves that dictate medium fluctuations within major trend; (c) short run trends or ripple that define insignificant changes within intermediate trend. These trends are supported by volume of transactions. If the demand for security continuously increases along with a high transaction volume, it will result in an upward trend. In an increasing price, investors would try to sell their holding to make profit on their investments. It will result in increase in supply of the security which results in a declining trend. However, if it is not supported by a higher volume, then peak and trough of a simultaneous up-trends and down-trend are going to be higher than its prior one. If this be the case, the overall trend will be upward sloping. However, the overall trend will be downward sloping if the reverse is true.



Trends

Movement of price of a security characterizes its trend. A simultaneous uptick and downtick in the movement of stock price is called rally. Trend is observed by connecting the peaks of the rallies. If the rallies are ascending, the trend is upward sloping and vice versa. The trend created based on past price performance of a stock is also used to predict the future movement of the stock. A trend may be horizontal as well. Penetration of a trend line is called reversal or consolidation. If the price breaks a present ascending or descending trend and creates a reverse trend, it is called reversal. However, if it breaks an ascending or descending trend and creates a horizontal trend, it is called consolidation. Hence, investment decisions are taken taking into consideration both trend lines and the price charts. Important observations that may be made of different price charts and their discernible trend lines are as follows:

- (a) In a head-and-shoulder chart, the necklines of the shoulders form a horizontal trend. However, the trend joining the necks is forming a right angled triangle with the trend joining the head. At the same time, the price chart shows signs of reversal when price moves from first shoulder to head and head to the second shoulder. Hence, the whole chart may be reversed in case of head-and-shoulder formation.
- (b) If the number of peaks and troughs that touch the trend line and return without penetrating it are high, it indicates the price obeys the trend and the trend is accurate and will persist for discernible future.
- (c) If the trend line is long, then penetration of such trend is significant and perceived to stay for a significant period.
- (d) If a trend line is steep, it may be easily violated with small sideward movement or consolidation which may start a new trend in the same direction. Hence, a steeper trend is not useful in identifying a reversal. A penetration of flat trend line on the other hand may be indication of reversals. However, sometimes, it may miss out some important reversals.
- (e) The distance between higher rallies just preceding the penetration and the trend line the measure by which the price is going to fall just after the reversal. The reverse is true in case of a downward sloping trend line.

A trend is supported not only by price charts, but also by volumes. Hence, trends must be studied along with the volume of transaction at a particular price.

Volume

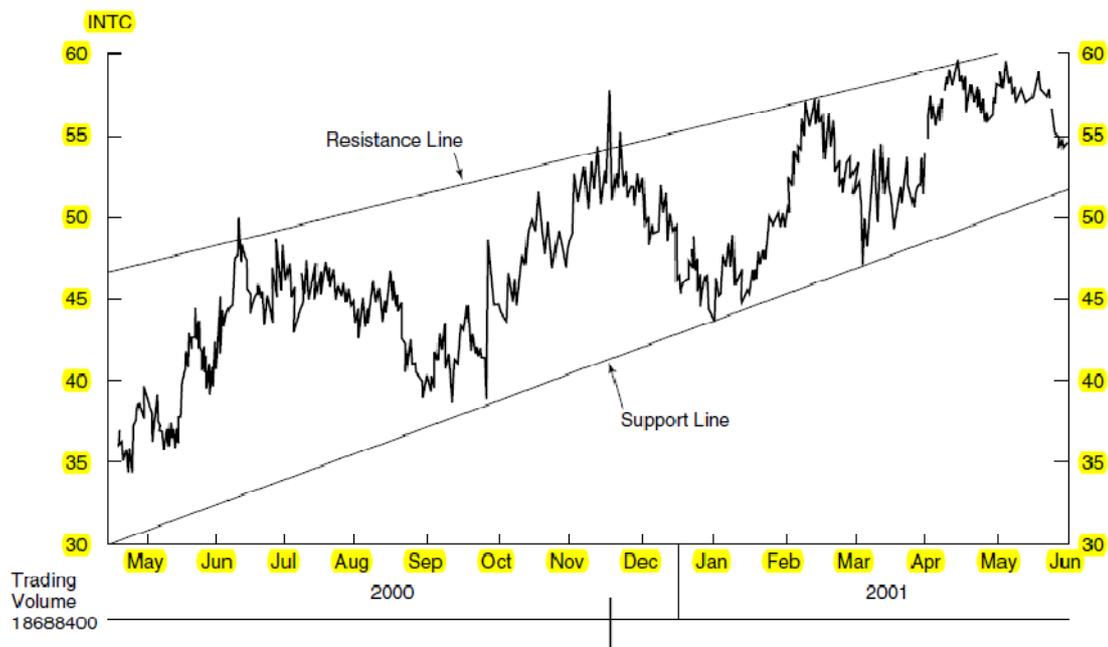
Technical analysts confirm the price trend by taking into consideration the volume of shares traded. It actually signifies the intensity of price reactions. Volume of transactions often predicts reversals of trends. Important observations that may be made based on relationship between volume and trend can be identified as follows:

- (a) If the peaks of price rallies are increasing along with the peaks of the volume rallies (peak of subsequent volume is higher than the preceding one), it is a normal market tendency and the market may not see a reversal in near future. However, if the volume is diminishing (peak of volume is lower than that of the preceding one) with rise in prices, it is actually an indication of reversal.
- (b) If price and volume both expands for a significant amount of time, the bulls offload their shares resulting in sudden drop in prices in the market. It is called speculators' blow-off.

- (c) If a recovering market from a bearish trend corrects itself and arrive at a level slightly higher than the previous low while the peak of the volume at that stage is lower than the previous peak volume, then beginning of a bullish trend is indicated.
- (d) A bullish trend may come to an end if the volumes at each successive rally are on the decrease. A trend penetration in such situation may indicate a reversal.
- (e) If the price falls at an accelerated pace along with an expanding volume, it could be an indication of reversal. It is called selling climax in a bearish market.
- (f) If there is accumulation at the end of a bearish trend which is supported by a high volume, it is indicative of persistent effort of raising the price. Hence, it will start the bullish trend in the market. On the other hand, distribution in a bullish market with high volume would indicate beginning of bearish trend. However, if the volume remains unchanged it may result in consolidation.

Support and Resistance

Support and resistance are the two price ranges between which the stock price is expected to move. When the stock prices reaches support levels, technicians expect an increase in demand for stock and a reversal in the bearish trend set in. After a massive profit booking of the stock, the investors who have not bought the stock at its first increase have been waiting for the first reversal. So, whenever stock price shows signs of reversal, there is an increase in demand resulting in the price line to move back from a declining trend and start rising again. However, resistance is those price ranges beyond which prices are not allowed to go up. When the stock price reaches resistance, the technicians expect a heavy supply of stock in the market. After a heavy decline in the stock, professional investors buy it to sell it at the breakeven point. So, a huge quantum of stock is overhanging in the market. Whenever the stock price reaches its target, those overhanging stocks reaches the market and the huge supply of stock causes the price to fall. If stock price goes beyond the resistance level, it is indicative of bullish trend in the market. However, if the stock price goes below the support level, it is indicative of bearish trend in the market.



PAST YEAR QUESTIONS

Theory

1. Explain how financial assets create wealth in the economy?
2. Short Notes

- Real Assets vs. Financial Assets
3. What kind of indices are S&P CNX Nifty and BSE Sensex?
 4. Short notes:
 - Stock indices and its calculation
 5. What are the key domestic economic variables to be considered for economic analysis? Explain.
 6. How economic trends impact industry performance?
 7. Explain the factors to forecast overall economy?
 8. Differentiate between leading, lagging and coincident indicators of economic activity and give an example of each.
 9. Discuss business cycle analysis as a part of industry analysis.
 10. Why industry analysis is valuable? Name 3 industries which are sensitive to downturn in business cycle.
 11. Why industry analysis should precede company analysis?
 12. In terms of asset turnover and profit margin, discuss how a jewellery shop and a grocery store might differ? Would you expect their return on equity to differ? Explain.
 13. What is P/E ratio? Explain the factors that can change the P/E ratio over different periods.
 14. What is the impact of retention ratio on P/E ratio if growth is constant?
 15. State the disadvantages of constant growth dividend discount model.
 16. What would you look for to justify the P/BV ratio of 3?
 17. Explain how PE ratio and EPS are associated?
 18. What is trailing PE ratio?
 19. How would an investor determine intrinsic value of a share?
 20. Once the intrinsic value has been calculated, how should he decide on whether or not to buy it?
 21. Holding everything else constant, what effect would the following have on a company's PE ratio?
 - An increase in expected growth rate
 - A decrease in expected dividend pay out
 - An increase in the expected risk free rate of return
 - An increase in the risk premium
 22. A decrease in the required rate of return
 23. Explain the implications of high and low PE ratios.
 24. Distinguish between YTM and Realised yield.
 25. In terms of relationship between YTM, coupon rate and CY, explain when market price of a bond is equal to, less than and greater than face value of the bond.
 26. Distinguish between YTM, YTC and Realised Yield.
 27. How the price of bond determined?
 28. What effect does the use of semi-annual discounting have on the value of a bond in relation to annual discounting?
 29. Distinguish between callable and convertible bond.
 30. Short notes:
 - Disaggregation of ROE
 - EV/EBITDA
 - H Model of Equity valuation
 - PEG ratio
 - Relative valuation of shares
 - Variables that affect PE ratio
 - Cash flow method of equity valuation
 - P/BV ratio
 31. Explain the basic concepts of trends, relationships between volume and trends and resistance and support levels underlying chart analysis.
 32. Short notes

- Dow theory

Problems

1.

Share	Price in base year (Rs.)	Price in year 't' (Rs.)	No. of outstanding shares (million)
A	100	130	150
B	80	50	20
C	75	90	50

- (i) What is price-weighted index, equal weighted index, and value weighted index for year t?

2.

Share	Price in base year (Rs.)	Price in current year (Rs.)	No. of outstanding shares (million)
A	12	16	10
B	18	15	5
C	35	60	6
D	20	30	40
E	15	6	30

- (i) Calculate and interpret simple and weighted index.

2.

Profit margin	3.8%
Sales	Rs. 535 lakh
Net operating assets	Rs. 150 lakh

- (i) The company adds a new product with 4.8% profit margin and asset turnover of 2.3. Interpret the impact on ROA if the new product is introduced.

4.

Dividend per share in the coming year	Rs. 2.30
Risk premium	7%
Company beta	1.4
Risk free rate	6%
Growth	6%

- (i) Calculate market price
 (ii) Calculate dividend yield at price obtained above.(23.46)
 (iii) If beta declined to 1.2, calculate revised market price/ share
 (iv) Explain change in price.

3.

Growth rate of dividend for 5 years	20%
Growth rate after 5 years	10%

Required rate of return	15%
Current year EPS	Rs. 4.24
Current book value/ share	Rs. 13.60
Dividend pay-out ratio	40%

- (i) Calculate intrinsic value of share at year end.
- (ii) Calculate P/BV ratio.

4.

Current EPS	Rs. 2.10
Current DPS	Rs. 0.69
Expected growth rate for first 5 years	15%
Stable growth after 5 years	6%
Dividend payout after 5 years	65%
Beta coefficient	1.4
Market rate of return	11.8%
Treasury bond rate	6.3%

- (i) Calculate intrinsic value of share.

5.

Current MPS	Rs. 57
Current DPS	Rs. 1.37
Dividend growth for the last 5 years	24%
The period for which dividend is expected to decline	12 years
Perpetual growth after 12 years	6%
Required rate of return	10%

- (i) Calculate intrinsic value of share using H Model.
- (ii) Determine value of share if normal growth begins immediately.
- (iii) Based on the answer of (i), determine whether the shares are overvalued, undervalued or fair valued.

6.

Growth rate for the first 3 years	30%
Growth rate for next 5 years	20%
Perpetual growth rate after 5 years	6%
EPS	Rs. 5
Required rate of return	20%
Retention ratio	60%

- (i) Calculate estimated price of share.

7.

Current MPS	Rs. 50
DPS in the coming year	Rs. 2
Required rate of return	10%

- (i) What is the implied growth rate?
- (ii) If growth rate is 7%, is the stock a bargain?

8.

Company	Growth rate	Price (Rs.)	EPS (Rs.)
A	20	13.25	2
B	35	75	2
C	25	12	1

- (i) Using the PEG ratio, determine which of the firms might interest growth investors.

9.

Current MPS	Rs. 73
Perpetual growth	8.5%
DPS	Rs. 1.68

- (i) What rate of return were investors expecting?
- (ii) If required ROE is 12% and dividend payout ratio is 50% in the coming year, what is the implied growth rate? What is the expected rate of return?

10. Consider the following:

(a) Stock A provides dividend of Rs. 10 forever.

(b) Stock B is expected to pay dividend Rs. 5 next year. Thereafter dividend growth is expected to be 4 percent a year forever.

(c) Stock C is expected to pay a dividend of Rs. 5 next year. Thereafter, dividend growth is expected to be 20% for next 5 years and 0% thereafter.

- (i) If the market capitalisation rate for each stock is 10%, which stock is most valuable?
- (ii) Will your answer change, if market capitalisation is 7%?

ROE of A Ltd. is 18% and B Ltd. is 14%. Does this mean A will grow faster than B? Explain.

11.

Face value of share	Re. 1
Dividend percentage	125%
Growth for next years	8%
Historical growth rate	7%
Purchase price of the stock at the end of 3 rd year	Rs. 40

- (i) How much you are willing to pay if required rate of return 14%
- (ii) How much you are willing to pay if 8% growth can be maintained indefinitely and required rate return is 14%
- (iii) If the situation of (ii) is true, what is the value of share after 3 years?

12.

Expected DPS in the coming year	Rs. 7
Expected growth rate	6%
Retention ratio	30%

- (i) Calculate expected EPS for the coming year.

13.

Plough back ratio	.6
ROE	20%
Expected EPS	Rs. 5
Required rate of return	12.5%

- (i) Calculate price of equity share.
(ii) What will be the price if ROE reduces to 10%
(iii) What will be the price if ROE remains the same, but payout ratio is 100%

14.

Current DPS	Rs. 3
Present growth rate	50%
Growth rate will fall linearly for a period	10 years
Stabilised rate	12%
Return	16%

- (i) Calculate intrinsic value of share.

15.

DPS last year	Rs. 4.38
EPS last year	Rs. 6.26
ROE	11.63%
Required rate of return	9%

- (i) Calculate intrinsic value of share.
(ii) If MPS is Rs. 73.18, what is implied ROE?

16.

EPS last year	Rs. 4.5
Dividend payout ratio	55%
ROE	10%
Required rate of return	11%

- (i) Calculate intrinsic value of company's share.
(ii) If growth rate is 15% for next 2 years and then historical growth follows for infinity, what is the price of security?
(iii) Can H Model be used? Give reasons.

17.

DPS one year from now	Re 1
Growth rate	5%
Current price	Rs. 10

- (i) Calculate price of share 2 years from now.

18.

Expected growth rate	9.5%
Current MPS	Rs. 55
Expected DPS next year	Rs. 1.1

- (i) Calculate required rate of return
(ii) If required rate is 12%, is the stock a good bargain? Give reasons.

19.

Current DPS	Re. 1
DPS in next year	Re. 1
DPS at the end of year 2	Rs. 2
DPS at the end of year 3	Rs. 3
Growth rate after year 3	6%
Market risk premium	4.5%
Treasury bond rate	6%
Beta	1.13

- (i) Calculate share price.

20.

Purchase price of bond (redeemable at par)	Rs. 2000
Coupon rate	20%
Maturity	5 years
Reinvestment rate	25%

- (i) Calculate YTM.
(ii) Calculate YTM, if all interest payments have been spent and not reinvested.

21.

Face value of the bond	Rs. 1000
Current selling price	Rs. 1200
Coupon rate	10%
Interest payment	Annual

- (i) What is the current yield?
(ii) What is YTM if reinvestment rate is 7%?
(iii) If the bond is called 3 years from now at a price of Rs. 1300, what is YTC?

22.

Face value of the bond	Rs. 1000
Maturity period	10 year
Interest payment	Half yearly

Required rate of return	16%
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- (i) Find the value of the bond.

23.

Face value of the bond	Rs. 1000
Purchase price	Rs. 650
Maturity period	5 years

- (i) What is its return to the investors?

24.

Coupon rate	10%
Maturity	5 years
Bond is issued	2 years ago
Face value	Rs. 1000
Interest payment	Semi-annual

- (i) What price should an investor be willing to pay for the bond?

25.

Face value of the bond	Rs. 1000
Coupon rate	8%
Interest payment	Semi-annual
Current YTM	10%

- (i) What will be price if YTM is 12%.
(ii) Explain change in price.

26.

Face value of the bond	Rs. 1000
Coupon rate	7%
Interest payment	Semi-annual
Redemption at	110% of face value
Maturity	5 years
Purchase price	Rs. 124.12

- (i) Calculate YTM.

27.

Face value of the bond	Rs. 1000
Coupon rate	6%
Maturity	5 years
Call option to be exercised after	3 years
Purchase price	Rs. 883.40

- (i) Calculate YTM

- (ii) Calculate YTC if call is exercised.

28.

Face value of the bond	Rs. 10 crore
Coupon rate	12%
Interest payment	Semi-annual
Redemption	In 2 equal annual instalment each amounting to 50% of par value of the bond
Maturity period	7 years
YTM	10%

- (i) What price you would buy these bonds today?

29.

Face value of the bond	Rs. 10
Coupon rate	14%
Interest payment	Annual
Maturity period	3 years
YTM	10%

- (i) Determine price of the bond.
(ii) If YTM is 8%, what would the price of bond be?
(iii) Explain why such difference in price occurs.

30. Calculate YTM for a 10 year zero coupon bond (face value Rs. 1000) sold at Rs. 400.