Stock Market Quotations and Stock Market Indices

Information on stock market activity is reported in various media. It is covered by on-line services, newspapers, business periodicals, other publications, radio, and television.

Investors are interested in knowing what is happening to individual stocks and what is happening to the market as a whole. Let us see how the information about these aspects is reported.

Individual Stock Quotations Investors can get to know what is happening to individual stocks and what is happening to the market as a whole by referring to the websites of BSE and NSE. For instance you may go to https://www.nseindia.com/products/content/equities/equities/archieve_eq.htm and select a report named Bhavcopy dated 03-09-2018 to see the following traded details of Bajaj Auto Limited stock on NSE on that day. ISIN (last column) stands for International Securities Identification Number.

Symbol	Series	Open	High	Low	Close	Last	Prev close	Total Trdqty	Total Trdval	Time Stamp	Total Trade	ISIN
BAJAJ-AUTO	EQ	2765	2807.7	2750	2771.9	2766	2744.85	876984	2437919650	3-Sep-18	36274	INE917I01010

Some of the important abbreviations used in stock quotations are:

con - convertible
xd - ex (excluding) dividend
cd - cum (with) dividend
xr - ex (excluding) right
sl - small lot

Stock Market Indices Investors often ask the question: How is the market doing? This interest in the broad market movement stems from the general observation that prices of most of the stocks tend to move together, a fact that has a fairly strong empirical underpinning. The general movement of the market is measured by indices representing the entire market or important segments thereof.

The two most popular stock market indices in India are Sensex and Nifty. A brief discussion of them follows:

- *S&P BSE Sensex* Perhaps the most widely followed stock market index in India, the *S&P BSE BSE Sensex*, popularly called the *Sensex* reflects the movement of 30 sensitive shares. The index of

any trading day reflects the aggregate market value of the floating stock of the sample of 30 shares on that day in relation to the average aggregate market value of the floating stock of these shares in the base year, 1978-79. The base value of this index is 100.

- *Nifty 50* Perhaps the most rigorously constructed stock market index in India, the *Nifty 50* reflects the price movement of 50 shares selected on the basis of market capitalisation and liquidity (impact cost). The index of any trading day reflects the aggregate market value of the floating stock of a sample of 50 shares on that day in relation to the aggregate market value of the floating stock of those shares on November 3, 1995. The base value of this index is 1000.

SUMMARY

- The term value is used in different senses. Liquidation value, going concern value, book value, market value, and intrinsic value are the most commonly used concepts of value.
- The **intrinsic value** of any asset, real or financial, is equal to the present value of the cash flows expected from it. Hence, determining the value of an asset requires an estimate of expected cash flows and an estimate of the required return.
- The value of a bond is:

$$P = \sum_{t=1}^{n} \frac{C}{(1+r)^t} + \frac{M}{(1+r)^n}$$

- A basic property of a bond is that its price varies inversely with yield.
- The relationship between coupon rate, required yield, and bond price is as follows:

Coupon rate < Required yield ⟷ Price < Par (Discount bond)
Coupon rate = Required yield ⟷ Price = Par
Coupon rate > Required yield ⟷ Price > Par (Premium bond)

- The **current yield** on a bond is defined as: Annual interest / Price
- The **yield to maturity** (YTM) on a bond is the rate of return the investor earns when he buys the bond and holds it till maturity. It is the value of *r* in the bond valuation model. For estimating YTM readily, the following approximation may be used:

$$\text{YTM} = \frac{C + (M - P)/n}{0.4M + 0.6P}$$

- According to the **dividend discount model**, the value of an equity share is equal to the present value of dividends expected from its ownership.
- If the dividend per share remains constant the value of the share is:

$$P_0 = D / r$$

- If the dividend per share grows at a constant rate, the value of the share is:

$$P_0 = D_1/(r-g)$$

- The two key drivers of dividend growth are (a) ploughback ratio and (b) return on equity.
- The value per share, according to the *H* model is:

$$P_0 = \frac{D_0(1+g_n)}{r-g_n} + \frac{D_0 H(g_a - g_n)}{r-g_n}$$

- An approach to valuation, practised widely by investment analysts, is the P/E ratio approach. The value of an equity share, under this approach, is estimated as follows:

$$P_0 = E_1 \times P_0/E_1$$

- The stock price may be considered as the capitalised value of the earnings under the assumption of no growth plus the present value of growth opportunities.
- The stock market consists of a primary segment and a secondary segment. The principal bourses are the National Stock Exchange and the Bombay Stock Exchange, accounting for the bulk of the trading on the Indian stock market.

QUESTIONS

1. Describe briefly the various concepts of value.
2. Discuss the basic bond valuation formula.
3. State the formula for a bond which pays interest semi-annually.
4. What is the relationship between coupon rate, required yield, and price?
5. Explain and illustrate the following yield measures: current yield, yield to maturity, and yield to call.
6. State and illustrate the formula to find the approximate YTM on a bond.
7. Discuss the constant growth dividend discount model.
8. Explain the two stage dividend discount model.
9. Discuss the *H* model.
10. What is the impact of growth on price, dividend yield, capital gains yield, and price-earnings ratio?
11. Discuss the P/E ratio approach to stock valuation.
12. How is the E/P linked to the required return and the present value of growth opportunities?
13. Explain how the price-earnings ratio is related to growth, dividend payout ratio, and the required return.
14. Discuss the transformation of the Indian stock market from mid 1990s.
15. Discuss the salient features of the National Stock Exchange.
16. Discuss the salient features of the Bombay Stock Exchange.

17. How is stock price reported?

SOLVED PROBLEMS

7.1 A ₹ 100 par value bond bearing a coupon rate of 12 percent will mature after 5 years. What is the value of the bond, if the discount rate is 15 percent?

Solution Since the annual interest payment will be ₹ 12 for 5 years and the principal repayment will be ₹ 100 after 5 years, the value of the bond, at a discount rate of 15 percent, will be

$$\begin{aligned} V &= ₹\ 12\ (\text{PVIFA}_{15\%,\,5\ \text{yrs}}) + ₹\ 100\ (\text{PVIF}_{15\%,\,5\ \text{yrs}}) \\ &= ₹\ 12\ (3.352) + ₹\ 100\ (0.497) \\ &= 40.22 + 49.70 = ₹\ 89.92 \end{aligned}$$

7.2 The market price of a ₹ 1,000 par value bond carrying a coupon rate of 14 percent and maturing after 5 years is ₹ 1050. What is the yield to maturity (YTM) on this bond? What is the approximate YTM?

Solution The YTM is the value of r in the following equation:

$$\begin{aligned} 1{,}050 &= \sum_{t=1}^{5} \frac{140}{(1+r)^t} + \frac{1{,}000}{(1+r)^5} \\ &= 140\ (\text{PVIFA}_{r,\,5\ \text{yrs}}) + 1{,}000\ (\text{PVIF}_{r,\,5\ \text{yrs}}) \end{aligned}$$

Let us try a value of 13 percent for r. The right hand side of the above expression becomes:

$$\begin{aligned} &140\ (\text{PVIFA}_{13\%,\,5\ \text{yrs}}) + 1{,}000\ (\text{PVIF}_{13\%,\,5\ \text{yrs}}) \\ &= 140\ (3.517) + 1{,}000\ (0.543) \\ &= 492.4 + 543.0 = ₹\ 1035.4 \end{aligned}$$

Since this is less than ₹ 1,050, we try a lower value for r. Let us try r = 12 percent. This makes the right-hand side equal to:

$$\begin{aligned} &140\ (\text{PVIFA}_{12\%,\,5\ \text{yrs}}) + 1{,}000\ (\text{PVIF}_{12\%,\,5\ \text{yrs}}) \\ &= 140\ (3.605) + 1{,}000\ (0.567) \\ &= 504.7 + 567.0 = ₹\ 1071.7 \end{aligned}$$

Thus, r lies between 12 percent and 13 percent. Using a linear interpolation in this range, we find that r is equal to:

$$12\% + (13\% - 12\%)\ \frac{1071.7 - 1050.0}{1071.7 - 1035.4} = 12.60\ \text{percent}$$

(b) The approximate YTM works out to:

$$\text{YTM} = \frac{140 + (1{,}000 - 1{,}050)/5}{0.40 \times 1000 + 0.6 \times 1050} = 12.62\ \text{percent}$$

7.3 A ₹ 100 par value bond bears a coupon rate of 14 percent and matures after 5 years. Interest is payable semi-annually. Compute the value of the bond if the required rate of return is 16 percent.

Solution

In this case the number of half-yearly periods is 10, the half-yearly interest payment is ₹ 7, and the discount rate applicable to a half-yearly period is 8 percent. Hence, the value of the bond is:

$$V = \sum_{t=1}^{10} \frac{7}{(1.08)^t} + \frac{100}{(1.08)^{10}}$$
$$= 7\,(\text{PVIFA}_{8\%,\,10\,\text{yrs}}) + 100\,(\text{PVIF}_{8\%,\,10\,\text{yrs}})$$
$$= 7\,(6.710) + 100\,(0.463)$$
$$= 46.97 + 46.30$$
$$= ₹\,93.27$$

7.4 The equity stock of Rax Limited is currently selling for ₹ 30 per share. The dividend expected next year is ₹ 2.00. The investors' required rate of return on this stock is 15 percent. If the constant growth model applies to Rax Limited, what is the expected growth rate?

Solution

According to the constant growth model

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

This means

$$g = r - D_1 / P_0$$

Hence, the expected growth rate (g) for Rax Limited is:

$$g = 0.15 - \frac{2.00}{30.00} = .083 \text{ or } 8.3 \text{ percent}$$

7.5 Vardhman Limited's earnings and dividends have been growing at a rate of 18 percent per annum. This growth rate is expected to continue for 4 years. After that the growth rate will fall to 12 percent for the next 4 years. Thereafter, the growth rate is expected to be 6 percent forever. If the last dividend per share was ₹ 2.00 and the investors' required rate of return on Vardhman's equity is 15 percent, what is the intrinsic value per share?

Solution The intrinsic value per share of Vardhman may be computed using a 3-step procedure.

Step 1: The dividend stream during the first eight years when Vardhman would enjoy a relatively high rate of growth will be:

$$D_1 = 2.00\,(1.18) = 2.36$$
$$D_2 = 2.00\,(1.18)^2 = 2.78$$
$$D_3 = 2.00\,(1.18)^3 = 3.29$$
$$D_4 = 2.00\,(1.18)^4 = 3.88$$
$$D_5 = 2.00\,(1.18)^4\,(1.12) = 4.34$$
$$D_6 = 2.00\,(1.18)^4\,(1.12)^2 = 4.86$$
$$D_7 = 2.00\,(1.18)^4\,(1.12)^3 = 5.45$$
$$D_8 = 2.00\,(1.18)^4\,(1.12)^4 = 6.10$$

The present value of this dividend stream is:

$$2.36\,(0.870) + 2.78\,(0.756) + 3.29\,(0.658) + 3.88\,(0.572)$$
$$+ 4.34\,(0.497) + 5.45\,(0.432) + 6.10\,(0.376) = ₹\ 16.83$$

Step 2: The price of the share at the end of 8 years, applying the constant growth model at that point of time, will be:

$$P_8 = \frac{D_9}{r - g_n} = \frac{D_8(1+g_n)}{r - g_n}$$
$$= \frac{2.00(1.18)^4(1.12)^4(1.06)}{0.15 - 0.06} = ₹\ 71.84$$

The present value of this price is:

$$\frac{71.84}{(1.15)^8} = 23.49$$

Step 3: The sum of the above components is:

$$P_0 = ₹\ 16.83 + ₹\ 23.49 = ₹\ 40.32$$

7.6 The current dividend on an equity share of Pioneer Technology is ₹ 3.00. Pioneer is expected to enjoy an above-normal growth rate of 40 percent for 5 years. Thereafter, the growth rate will fall and stabilise at 12 percent. Equity investors require a return of 15 percent from Pioneer's stock. What is the intrinsic value of the equity share of Pioneer?

Solution The inputs required for applying the two-stage growth model are:

g_1 = 40%, g_2 = 12%, n = 5 years, r = 15%

$D_1 = D_0(1+g_1)$ = ₹ 3 (1.40) = ₹ 4.20

Plugging these inputs in the two-stage growth model, we get the intrinsic value estimate as follows:

$$P_0 = 4.20\left[\frac{1-\left[\frac{1.40}{1.15}\right]^5}{0.15-0.40}\right] + \left[\frac{4.20(1.40)^4(1.12)}{0.15-0.12}\right]\left[\frac{1}{(1.15)^5}\right]$$
$$= 28.12 + 299.48 = ₹\ 327.60$$

7.7 The current dividend on an equity share of National Computers Limited is ₹ 5.00. The present growth rate is 50 percent. However, this will decline linearly over a period of 8 years and then stabilise at 10 percent. What is the intrinsic value per share of National Computers, if investors require a return of 18 percent from its stock?

Solution The inputs required for applying the *H*-model are:

D_0 = ₹ 5.00, g_a = 50%, H = 4 years, g_n = 10 years, r = 18%

Plugging these inputs in the *H*-model we get the intrinsic value estimate as follows:

$$P_0 = \frac{5.00[(1.10) + 4(0.50 - 0.10)]}{0.18 - 0.10} = ₹\ 168.75$$

PROBLEMS

7.1 **Bond Value** A ₹ 100 par value bond, bearing a coupon rate of 11 percent will mature after 5 years. What is the value of the bond, if the discount rate is 15 percent?

7.2 **Bond Value** A ₹ 100 par value bond, bearing a coupon rate of 12 percent, will mature after 7 years. What is the value of the bond if the discount rate is 14 percent? 12 percent?

7.3 **YTM** The market value of a ₹ 1,000 par value bond, carrying a coupon rate of 12 percent and maturing after 7 years, is ₹ 750. What is the yield to maturity on this bond?

7.4 **YTM** The market value of a ₹ 100 par value bond, carrying a coupon rate of 14 percent and maturing after 10 years, is ₹ 80. What is the yield to maturity on this bond?

7.5 **Bond Value** A ₹ 100 par value bond bears a coupon rate of 12 percent and matures after 6 years. Interest is payable semi-annually. Compute the value of the bond if the required rate of return is 16 percent, compounded semi-annually.

7.6 **YTM** You are considering investing in one of the following bonds:

	Coupon rate	*Maturity*	*Price/₹ 100 par value*
Bond A	12%	10yrs	₹ 70
Bond B	10%	6yrs	₹ 60

Your income tax rate is 30 percent and your capital gains tax is effectively 10 percent. Capital gains taxes are paid at the time of maturity on the difference between the purchase price and par value. What is your post-tax yield to maturity from these bonds?

7.7 **Bond Value** A company's bonds have a par value of ₹ 100, mature in 7 years, and carry a coupon rate of 12 percent payable semi-annually. If the appropriate discount rate is 16 percent, what price should the bond command in the market place?

7.8 **Stock Price** The share of a certain stock paid a dividend of ₹ 2.00 last year (D_0 = ₹ 2.00). The dividend is expected to grow at a constant rate of 6 percent in the future. The required rate of return on this stock is considered to be 12 percent. How much should this stock sell for now? Assuming that the expected growth rate and required rate of return remain the same, at what price should the stock sell 2 years hence?

7.9 **Stock Price** Sherief Corporation's previous dividend was ₹ 12.00. Earnings and dividends are expected to grow at a rate of 10 percent. The required rate of return on Sherief's stock is 15 percent. What should be the market price of Sherief's stock now?

7.10 **Growth Rate** The equity stock of Max Limited is currently selling for ₹ 32 per share. The dividend expected next is ₹ 2.00. The investors' required rate of return on this stock is 12 percent. Assume that the constant growth model applies to Max Limited. What is the expected growth rate of Max Limited?

7.11 Rate of Return Fizzle Limited is facing gloomy prospects. The earnings and dividends are expected to decline at the rate of 4 percent. The previous dividend was ₹ 1.50. If the current market price is ₹ 8.00, what rate of return do investors expect from the stock of Fizzle Limited?

7.12 Variable Growth Rate The Commonwealth Corporation's earnings and dividends have been growing at the rate of 12 percent per annum. This growth rate is expected to continue for 4 years. After that the growth rate would fall to 8 percent for the next four years. Beyond that the growth rate is expected to be 5 percent forever. If the last dividend was ₹ 1.50 and the investors' required rate of return on the stock of Commonwealth is 14 percent, how much should be the market value per share of Commonwealth Corporation's equity stock?

7.13 Two Stage Growth Model Determine the intrinsic value of an equity share, given the following data:

Last dividend (D_0)	: ₹ 2.00
Growth rate for the next five years	: 15 percent
Growth rate beyond 5 years	: 10 percent

Assume a required rate of return.

7.14 YTM You can buy a ₹ 1000 par value bond carrying an interest rate of 14 percent (payable annually) and maturing after 4 years for ₹ 900. If the re-investment rate applicable to the interest receipts from this bond is 16 percent, what will be your yield to maturity?

7.15 Two Stage Growth Model The current dividend on an equity share of Dizzy Limited is ₹ 2.00. Dizzy is expected to enjoy an above-normal growth rate of 18 percent for 6 years. Thereafter the growth rate will fall and stabilise at 12 percent. Equity investors require a return of 16 percent from Dizzy's stock. What is the intrinsic value of the equity share of Dizzy?

7.16 H Model The current dividend on an equity share of International Chemicals Limited is ₹ 4.00. The present growth rate is 20 percent. However, this will decline linearly over a period of 8 years and stabilise at 10 percent. What is the intrinsic value per share of International Chemicals Limited if investors require a return of 18 percent?

7.17 PVGO Mahaveer Electronics is expected to give a dividend of ₹ 8 next year and the same would grow by 12 percent per year forever. Mahaveer pays out 40 percent of its earnings. The required rate of return on Mahaveer's stock is 15 percent. What is the PVGO?

7.18 YTM Rajesh has invested ₹ 2 crores in ₹ 100 par 5 year bonds of a company which pays semi-annual interest of ₹ 5.5 which he regularly invests in bank deposits carrying interest at 9 percent. What is the yield to maturity of this arrangement?

7.19 YTM Ashok has paid ₹ 880 per bond to buy ₹ 1000 par bonds maturing after 8 years that pay an annual coupon of 10 percent. He falls in the income tax bracket of 30 percent. The capital gains tax is effectively 9 and has to be paid at

the time of maturity on the difference between the purchase price and par value. What is his post-tax yield to maturity from these bonds?

7.20 **PVGO** Bio Synthetics has a policy of maintaining a payout ratio of 40 percent. Their net profit margin is steady at 10 percent and sales growth rate is 9 percent. If the number of outstanding equity shares is 10 million and the forecasted sales for the year is ₹ 800 million, what is their present value of growth opportunities? The rate of return required by the investors in Bio Synthetics is 14 percent.

7.21 **Stock Valuation** Investors require a rate of return of 16 percent from the stock of Evergreen Industries, which has a strict policy of paying just 10 percent of their net profits as dividend on their outstanding equity shares of 0.8 crore. Their net profit margin is steady at 12 percent. The revenues of the company is likely to grow at a high growth rate of 30 percent for the next 3 years and thereafter at a modest rate of just 10 percent. If the sales now has just reached ₹ 200 crore, what is the current intrinsic value of their equity stock?

7.22 **Market Price** A dividend of ₹ 6 per share has been paid on the equity shares of Cosmos International and according to an analyst forecast the dividend and stock price are expected to grow at 5 percent in the future. If that forecast is reliable, and investors require a return of 20 percent from Cosmos what would be the likely market price per share after 2 years?

7.23 **Bond Yield** A ₹ 1000 par bond has a coupon rate of 10 percent paid annually. It matures in 12 years. It is currently selling for ₹ 1050. What is its yield to maturity? Use the approximate formula.

7.24 **Components of Bond Returns** Bond A caries an annual coupon of 10 percent and has a residual maturity of 5 years. Bond B carries an annual coupon of 8 percent and it too has a residual maturity of 5 years. Both the bond have a par value of ₹ 1000 and a YTM of 9 percent. Bond A sells at a discount. What is the current yield for Bond A and Bond B? What is the expected capital gains yield over the next one year for Bond A and Bond B?

7.25 **Deep Discount Bonds** On January 1, 2010 ABC Limited issues a 20-year deep discount bond maturing on December 31, 2030. The par value of the bond is ₹ 100000 and it was issued at ₹ 10000. On January 1, 2019 the bond was trading at ₹ 30,040. What was the implicit yield at the time of issues? What is the return to an investor who bought at the time of issue and sold on January 1, 2019? What return can an investor who buys on January 1, 2019 and holds it till maturity expect? Assume that there will be no default.

7.26 **Dividend Per Share** Shakti Limited stock currently sells for ₹ 90 per share. Investors, require a return of 14 percent on the firms stock. If the constant dividend growth rate applicable to the company is 8 percent, what was the dividend paid per share on the stock recently?

MINICASE - I

You have recently graduated from a business school and joined SMART INVEST as a financial analyst. Your job is to help clients in choosing a portfolio of bonds and stocks. Dinshaw Mistry, a prospective client, seeks your help in understanding how bonds and stocks are valued and what rates of return they offer. In particular, you have to answer the following questions.

a. How is the value of a bond calculated?
b. What is the value of a 5-year, ₹ 1,000 par value bond with a 10 percent annual coupon, if the required rate of return is 8 percent?
c. What is the approximate yield to maturity of an 8-year, ₹ 1,000 par value bond with a 10 percent annual coupon, if it sells for ₹ 1,060.
d. What is the yield to call of the bond described in part (c), if the bond can be called after 2-years at a premium of ₹ 1,050.
e. What is the general formula for valuing any stock, irrespective of its dividend pattern?
f. How is a constant growth stock valued?
g. Magnum chemicals is a constant growth company which paid a dividend of ₹ 6.00 per share yesterday (D_o = ₹ 6.00) and the dividend is expected to grow at a rate of 12 percent per year forever. If investors require a rate of return of 15 percent (i) what is the expected value of the stock a year from now? (ii) what is the expected dividend yield and capital gains yield in the first year?
h. Zenith Electronics paid a dividend of ₹ 10.00 per share yesterday (D_o = ₹ 10.00). Zenith Electronics is expected to grow at a supernormal growth rate of 25 percent for the next 4 years, before returning to a constant growth rate of 10 percent thereafter. What will be the present value of the stock, if investors require a return of 16 percent?
i. The earnings and dividends of Ravi Pharma are expected to grow at a rate of 20 percent for the next 3 years. Thereafter, the growth rate is expected to decline linearly for the following 5 years before settling down at 10 percent per year forever. Ravi Pharma paid a dividend of ₹ 8.00 per share yesterday (D_o = ₹ 8.00). If investors require a return of 14 percent from the equity of Ravi Pharma, what is the intrinsic value per share?

MINICASE - II

Jagan Reddy, the MD of Reddy Lifestyle was much dejected when his bankers simply refused any additional funding for his company. Somehow they didn't seem to share his enthusiasm over the company's prospects. Coming out of the bank, he called his CFO and close confidante Ram Rao. After showering a couple of choice adjectives on the bank manager he sobered down: 'What is the point in blaming the bank? Anyone can see that our stock is one of the worst performers in the market. Any idea why it is jinxed? Frankly, I have had enough of this useless furniture business. It can take us only thus far. Now, here is a secret-just keep it strictly to yourself: I think the time has come to unlock value in our old land investments. We can easily diversify into realty

business by the end of this year. We will then raise the needed funds by placing equity privately at a good premium. We can flaunt a growth rate as high as forty percent for the first four years and a fair twelve percent thereafter. All that is needed is a bit of guts! I will give you a whole six months' time to work on those hardnosed directors to make them see the writing on the wall, so that when I eventually come up with the real estate idea, they would jump for it. Enough for the day. Tomorrow we will discuss these in detail. Specifically I want you to come up with some answers, even if approximate for the following:

1. For our immediate need of ₹ 10 crores, I think the only way left is to go for a new series of unsecured debentures. Could you figure out the coupon rate we will have to offer for a five year issue now at par?
2. What should be our P/E ratio if we go for the new debenture issue? Also, based on our current earnings prospects, come up with some convincing calculations to show why our stock would continue to be a laggard in the market if we just stick to the present furniture business.
3. At what possible price would we be able to place the shares privately after a year, assuming that the board approves the diversification? Also let me know what would be the present value of growth opportunities then?'

   If you were the CFO, how would you have worked out the solutions for the above queries with the following data?

   Currently the company's 8 percent coupon debentures of face value of ₹ 100, with a remaining maturity of five years are trading at ₹ 90 per debenture. The current market price per equity share of face value ₹ 10 of the company is ₹ 24.70 and the average P/E multiple for the industry is 14. For simplicity you assume that the profitability, payout and turnover ratios remain unchanged. You decide to use a discount rate of 15 percent for the diversified company. The summarised financial statements of the company for the year ended just now are as under:

			(₹ in millions)
Net sales	625	Equity capital	250
		Reserve & surplus	80
Cost of goods	495	Loan funds	200
Gross profit	130	Total	530
PBIT	92		
Interest	20	Fixed assets	410
PBT	72	Investments	20
Tax	22	Net current assets	100
PAT	50	Total	530
Dividend	30		

PRACTICAL ASSIGNMENT

Value the equity share of the company of your choice using the two-stage growth model.

Make suitable assumptions along with justification with respect to g_1, n, g_2, and r. Compare your value with the prevailing market price and explain the discrepancy, if any.

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[1] The steps in simplification are:

$$P_0 = \frac{D_1}{(1+r)} + \frac{P_0(1+g)}{(1+r)} \quad (1)$$

$$P_0 = \frac{D_1 + P_0(1+g)}{(1+r)} \quad (2)$$

$$P_0(1+r) = D_1 + P_0(1+g) \quad (3)$$

$$P_0(1+r) - P_0(1+g) = D_1 \quad (4)$$

$$P_0(r-g) = D_1 \quad (5)$$

$$P_0 = \frac{D_1}{r-g} \quad (6)$$

[2] Start with

$$P_0 = \frac{D_1}{(1+r)} + \frac{D_2}{(1+r)^2} + \ldots + \frac{D_\infty}{(1+r)^\infty} = \frac{D_1}{(1+r)} + \frac{D_1(1+g)}{(1+r)^2} + \ldots \quad (1)$$

Multiplying both the sides of (1) by [(1 + g)/(1 + r)] gives:

$$P_0\left[\frac{1+g}{1+r}\right] = \frac{D_1(1+g)}{(1+r)^2} + \frac{D_1(1+g)^2}{(1+r)^3} + \ldots + \frac{D_1(1+g)^{n+1}}{(1+r)^{n+2}} \quad (n \to \infty) \quad (2)$$

Subtracting (2) from (1) yields:

$$\frac{P_0(r-g)}{(1+r)} = D_1\left[\frac{1}{(1+r)} - \frac{(1+g)^{n+1}}{(1+r)^{n+2}}\right] \quad (n \to \infty) \quad (3)$$

$$\text{As } (n \to \infty),\ \frac{(1+g)^{n+1}}{(1+r)^{n+2}} \to 0 \text{ because } g < r$$

Hence (2) becomes:

$$\frac{P_0(r-g)}{(1+r)} = \frac{D_1}{(1+r)} \quad (4)$$

This means:

$$P_0 = \frac{D_1}{r-g} \quad (5)$$

[3] Note that total return is the sum of the dividend yield and capital gain yield:

$$\frac{D_t + P_t - P_{t-1}}{P_{t-1}} = \frac{D_t}{P_{t-1}} + \frac{P_t - P_{t-1}}{P_{t-1}}$$

Total return = Dividend yield + Capital gains yield

Online Resources

http://highered.mheducation.com/sites/9353166527/student_view0/chapter7/index.html

- Additional Self-Test Problems
- Additional Solved Problems
- Chapters Excel
- Excel on Solved Problems
- Answer Key

6.35			$ 16,654,633
6.36			$ 30,781,329
6.37			₹ 9,434,536
6.38			8.32%
6.39			9.90%
6.41			7 years
6.42			14.84%
6.43			17.65%
6.44			9.60%
6.45			₹ 1,609,757
Minicase-1	1. Money needed 15 years hence		₹ 4,042,000
	2. Investment savings		₹ 48,338
	3. Donation need		₹ 157,676
	4. PV.life time salary		₹ 7,254,962
Minicase-2	1. Monthly deposit in RD 1		₹ 17,742
	in RD 2		₹ 20,236
	2.Deposit		₹ 61,53,292
	3. Deposit		₹ 45,95,432

CHAPTER 7

Problem no.			Answer
7.1			₹ 86.7
7.2	disc.14%		₹ 91.46
	disc.12%		₹ 100
7.3			18.70%
7.4			18.56%
7.5			₹ 84.92
7.6	Bond A		13.73%
	Bond B		17.47%
7.7			₹ 83.56
7.8	P_0		₹ 35.33
	P_2		₹ 39.70
7.9			₹ 264
7.10			5.75%
7.11			14%
7.12			₹ 23.77
7.13			₹ 136.37
7.14			17.39%
7.15			₹ 74.80
7.16			₹ 75
7.17			₹ 133.4
7.18			10.88%
7.19			9.06%
7.20			₹ 6.86
7.21			₹ 88.76
7.22			₹ 46.3
7.23			9.30%
7.24		A	B
	Current yield	9.62%	8.32%
	Capital gains yield next year	0.67%	0.65%
7.25	Return for seller		13%
	Return for buyer		11.55%
7.26			₹ 5
Minicase-1	b		₹ 1,080.30
	c		8.93%
	d		9%
	g (i)		₹ 250.88
	(ii) Dividend yield		3%
	Cap.gain yield		12%
	h		₹ 295.67
	i		₹ 250
Minicase-2	1		10.64%
	2. P/E ratio		10
	3. Possible price		₹ 131.47
	PVGO		₹ 108.42