Valuation of Shares

Question 47

You are requested to find out the approximate dividend payment ratio as to have the Share Price at ₹ 56 by using Walter Model, based on following information available for a Company.

	Amount ₹
Net Profit	50 lakhs
Outstanding 10% Preference Shares	80 lakhs
Number of Equity Shares	5 lakhs
Return on Investment	15%
Cost of Capital (after Tax) (K_e)	12%

(May 17, 5 Marks)

Solution 47

Determine approximate dividend payment ratio by using Walter Model:

$$P_0 = \frac{D}{k_e} + \frac{\frac{r}{k_e}[E - D]}{k_e}$$

Where,

P_0 = Present worth of Equity share = ₹ 56/-
E = Earning per share (WN: 1) = ₹ 8.4
D = Dividend per share
r = Return on Investment = 15 % or 0.15
K_e = Expected Rate of return to equity shareholder = 12 % or 0.12

WN.1: Earning Per Share (EPS)

Net Profit	50
(-) Preference dividend (80 lakhs X 10 %)	(8)
Earning available to equity shares holder	42
(÷) Number of Equity shares	5
EPS	₹ 8.4

Let D = 8.4x

$$\therefore 56 = \frac{8.4x}{0.12} + \frac{\frac{0.15}{0.12}[8.4 - 8.4x]}{0.12}$$

$56 \times 0.12 = 8.4x + 10.5 - 10.5x$
$6.72 = 2.1x + 10.5$
$2.1x = 10.5 - 6.72$
$2.1x = 3.78$
$x = 1.8$

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∴ Dividend payout ratio when P_0 = 56

$$\frac{1}{84} \times 100$$

= 21.4286 % (approx.)

Question 48

Rahim Enterprises is a manufacturer and exporter of woolen garments to European countries. Their business is expanding day by day and in the previous financial year the company has registered a 25% growth in export business. The company is in the process of considering a new investment project. It is an all equity financed company with 10,00,000 equity shares of face value of ₹ 50 per share. The current issue price of this share is ₹ 125 ex-divided. Annual earning are ₹ 25 per share and in the absence of new investments will remain constant in perpetuity. All earnings are distributed at present. A new investment is available which will cost ₹ 1,75,00,000 in one year's time and will produce annual cash inflows thereafter of ₹ 50,00,000. Analyse the effect of the new project on dividend payments and the share price.

(Nov 17, 8 Marks)

Solution 48

1. **Analysing the effect of new project on dividend payments:**

Current Market Price = ₹ 125

EPS = Dividend (D_0) = ₹ 25

$$\therefore k_e = \frac{\text{Dividend}}{\text{Current Market Price}} \times 100$$

$$\therefore k_e = \frac{25}{125} \times 100$$

$$\therefore k_e = 20\%$$

If the new project is taken up then dividend amount will get reduced for year 1 and dividend amount will increase from year 2 onwards because of annual cash inflows from the project.

∴ Dividend for year 1:

$$= ₹\,25 - \frac{₹\,1,75,00,000}{10,00,000 \text{ Shares}}$$

= ₹ 25 – ₹ 17.50 = ₹ 7.5 per share

Dividend for year 2 onwards:

$$= ₹\,25 + \frac{₹\,50,00,000}{10,00,000 \text{ Shares}}$$

= ₹ 25 + ₹ 5 = ₹ 30 per share

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2. Analysing the impact of new project on share price:

NPV of Project = PV of Cash Inflows – PV of Cash Outflows

$$= \frac{\frac{₹\ 50,00,000}{20\%}}{1 + 0.20} - \frac{₹\ 1,75,00,000}{1 + 0.20}$$

$$= \frac{₹\ 50,00,000 - ₹\ 1,75,00,000}{1.20}$$

= ₹ 62,50,000

Since, NPV of the project is positive, market price of the equity share will increase by ₹ 6.25 per share (₹ 62,50,000/10,00,000 Share)

∴New Price = ₹ 125 + ₹ 6.25 = ₹ 131.25

Question 49

Goldilocks Ltd. was started a year back with equity capital of ₹ 40 lakhs. The other details are as under:

Earnings of the company	₹ 4,00,000
Price Earnings ratio	12.5
Dividend paid	₹ 3,20,000
Number of Shares	40,000

Find the current market price of the share. Use Walter's Model.

Find whether the company's D/ P ratio is optimal, use Walter's formula.

(Nov 14, 5 Marks)

Solution 49

1. Determining current market price of share using Walter's Model:

$$P_0 = \frac{D}{k_e} + \frac{\frac{r}{k_e}[E - D]}{k_e}$$

Where

P_0 = Current Market price of share

E = Earning per share = ₹ 10/-

D = Dividend per share = ₹ 8/-

R = Return on Investment = 10% or 0.1

K_e = Expected Rate of Return for Equity shareholders = 8% or 0.08

$$= \frac{\text{Earnings}}{\text{Number of shares}} = \frac{₹\ 4,00,000}{40,000}$$

$$= \frac{\text{Dividend Paid}}{\text{No. of shares}} = \frac{₹\ 3,20,000}{40,000}$$

$$= \frac{\text{Earnings}}{\text{Total Investment}} \times 100 = \frac{₹\ 4,00,000}{40,00,000}$$

$$k_e = \frac{1}{\text{P/E Ratio}} = \frac{1}{12.5} = 0.08 \text{ or } 8\ \%$$

$$\therefore P_0 = \frac{8}{0.08} + \frac{\frac{0.1}{0.08}[10 - 8]}{0.08}$$

= 100 + 31.25 = ₹ 131.25/-

∴ Current Market price of share = ₹ 131.25/- per share

2. According to Walter's Model, when r > k_e, value of shares can be maximized by setting Dividend Payout ratio = 0
   Here, the company is paying dividend and hence company's D/P Ratio is not optimal.
   Calculating P_0 when D/P Ratio = 0

$$\therefore P_0 = \frac{0}{0.08} + \frac{\frac{0.1}{0.08}[10 - 0]}{0.08}$$

∴ P_0 = 0 + 156.25

∴ P_0 = ₹ 156.25

Question 50

The risk free rate of return is 5%. The expected rate of return on the market portfolio is 11%. The expected rate of growth in dividend of X Ltd. is 8%. The last dividend paid was ₹ 2.00 per share. The beta of X Ltd. equity stock is 1.5.

1. What is the present price of the equity stock of X Ltd.?
2. How would the price change when?
   - The inflation premium increases by 3%
   - The expected growth rate decreases by 3% and
   - The beta decreases to 1.3.

(May 18, 4 Marks)

Solution

1. Equilibrium price of Equity using CAPM

= 5% + 1.5 (11% – 5%)

= 5% + 9% = 14%

$$P = \frac{D_1}{K_e - g} = \frac{2.00\ (1.08)}{0.14 - 0.08} = \frac{2.16}{0.06} = ₹\ 36$$

2. New Equilibrium price of Equity using CAPM (assuming 3% on 5% is inflation increase)

= 5.15% + 1.3 (11% – 5.15%)

= 5.15% + 7.61% = 12.76%

$$P = \frac{D_1}{K_e - g} = \frac{2.00\ (1.05)}{0.1276 - 0.05} = ₹\ 27.06$$

Alternatively, it can also be computed as follows, assuming it is 3% in addition to 5%

= 8% + 1.3 (11% – 8%)

= 8% + 3.9% = 11.9%

$$P = \frac{D_1}{K_e - g} = \frac{2.00\ (1.05)}{0.119 - 0.05} = ₹\ 30.43$$

Alternatively, if all the factors are taken separately then solution of this part will be as follows:

1. Inflation Premium increase by 3%.

This raises RX to 17%. Hence, new equilibrium price will be:

$$= \frac{2.00\ (1.08)}{0.17 - 0.08} = ₹\ 24$$

2. Expected Growth rate decrease by 3%.

Hence, revised growth rate stand at 5%:

$$= \frac{2.00\ (1.05)}{0.14 - 0.05} = ₹\ 23.33$$

3. Hence, revised cost of equity shall be:

= 5% + 1.3 (11% – 5%)

= 5% + 7.8% = 12.8%

As a result, New Equilibrium price shall be

$$P = \frac{D_1}{K_e - g} = \frac{2.00\ (1.08)}{0.128 - 0.08} = ₹\ 45$$

Question 51

Shares of Volga Ltd. are being quoted at a price-earnings ratio of 8 times. The company retains 50% of its Earnings Per Share. The Company's EPS is ₹ 10.

You are required to determine:

1. the cost of equity to the company if the market expects a growth rate of 15% p.a.
2. the indicative market price with the same cost of capital and if the anticipated growth rate is 16% p.a.
3. the market price per share if the company's cost of capital is 20% p.a. and the anticipated growth rate is 18% p.a.

(Nov 18, 8 Marks)

Solution

1. Cost of Capital

Retained earnings (50%) ₹ 5 per share

Dividend (50%)	₹ 5 per share
EPS (100%)	₹ 10 per share (given)
P/E Ratio	8 times (given)
Market price	₹ 10 X 8 = ₹ 80 per share

Cost of equity capital

$$= \frac{\text{Div}}{\text{Price}} \times 100 + \text{Growth \%}$$

$$= \left(\frac{₹\ 5}{₹\ 80} \times 100\right) + 15\% = 21.25\%$$

2. Market Price

$$= \frac{\text{Dividend}}{\text{Cost of capital (\%)} - \text{Growth rate (\%)}}$$

$$= \frac{₹\ 5}{(21.25 - 16)\%} = ₹\ 95.24 \text{ per share}$$

3. Market Price

$$= \frac{₹\ 5}{(20 - 18)\%} = ₹\ 250 \text{ per share}$$

Alternatively, if candidates have assumed the given figure of EPS as of last year then answer will be as follows:

1. Cost of Capital

Retained earnings (50%)	₹ 5 per share
Dividend (50%)	₹ 5 per share
EPS (100%)	₹ 10 per share (given)
P/E Ratio	8 times (given)
Market price	₹ 10 X 8 = ₹ 80 per share

Cost of equity capital

$$= \frac{\text{Div}}{\text{Price}} \times 100 + \text{Growth \%}$$

$$= \frac{₹\ 5(1.15)}{₹\ 80} \times 100 + 15\% = 22.19\%$$

2. Market Price

$$= \frac{\text{Dividend}}{\text{Cost of capital (\%)} - \text{Growth rate (\%)}}$$

$$= \frac{₹\ 5.75}{(22.19 - 16)\%} = ₹\ 92.89 \text{ per share}$$

3. Market Price

$$= \frac{₹\ 5(1.18)}{(20 - 18)\%} = ₹\ 295 \text{ per share}$$

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Question 52

The shares of G Ltd. we currently being traded at ₹ 46. The company published its results for the year ended 31st March 2019 and declared a dividend of ₹ 5. The company made a return of 15% on its capital and expects that to be the norm in which it operates. G Ltd. Also expects the dividends to grow at 10% for the first three years and thereafter at 5%. You are required to advise whether the share of the company is being traded at a premium or discount.

PVIF @ 15% for the next 3 years is 0.870, 0.756 and 0.658 respectively.

(May 19, 8 Marks)

Solution

Expected dividend for next three years

Year 1 (D1)	=	5 (1.1) = 5.5
Year 2 (D2)	=	5.5 (1.1) = 6.05
Year 3 (D3)	=	6.05 (1.1) = 6.655
Required Rate (K_e) = 15%		
Present Value of Dividends	=	5.5 (0.870) + 6.05 (0.756) + 6.655 (0.658)
	=	4.785 + 4.574 + 4.379 = 13.74

Now, PV at growth rate of 5%

$$P_3 = \frac{D_4}{K_e - g} = \frac{6.655(1.05)}{0.15 - 0.05} = \frac{6.988}{0.1} = 69.88$$

Therefore, P0 = 69.88 x 0.658 = 45.98

Now, adding the PV of dividend at two different growth rates, we get,

13.74 + 45.98 = 59.72

Hence, it is clear that shares are being traded at discount i.e. undervalued because intrinsic value of share is more than the market price.

Question 53

ABB Ltd. has a surplus cash balance of ₹ 180 lakhs and wants to distribute 50% of it to the equity shareholders. The company decides to buyback equity shares. The company estimates that its equity share price after re-purchase is likely to be 15% above the buyback price. if the buyback route is taken.

Other information is as under:

1. Number of equity shares outstanding at present (Face value ₹ 10 each) is ₹ 20 lakhs.
2. The current EPS is ₹ 5.

You are required to calculate the following:

1. The price at which the equity shares can be re-purchased, if market capitalization of the company should be ₹ 400 lakhs after buy back.
2. Number of equity shares that can be re – purchased.
3. The impact of equity shares re-purchase on the EPS, assuming that the net income remains unchanged.

(May 19, 8 Marks)

Solution

1. Let P be the buyback price decided by ABB Ltd.

Market Capitalisation after Buyback

400 lakhs = 1.15P (Original Shares – Shares Bought Back)

$$= 1.15P \quad 20 \text{ Lakhs} - \frac{50\% \text{ of } 180 \text{ Lakhs}}{P}$$

= 23 Lakhs X P – 90 Lakhs X 1.15

= 23 Lakhs P – 130.50 Lakhs

= Again, 23 Lakhs P – 130.50 Lakhs

Or 23 Lakhs P = 400 Lakhs + 130.50 Lakhs

$$\text{Or } P = \frac{503.50}{23} = 21.89 \text{ per Share}$$

2. Number of Shares to be Bought Back:

$$\frac{₹ 90 \text{ lakhs}}{21.89} = 4.111 \text{ lakhs (Approx.) or } 411147 \text{ shares}$$

3. Shares after buyback

= 20 lakhs – 4.111 lakhs **=** 15.889 lakhs

Or 20,00,000 – 4,11,147 **=** 15,88,853 shares

$$\therefore \text{EPS} = \frac{5 \text{ X } 20 \text{ lakhs}}{15.889 \text{ lakhs}} = ₹ 6.29$$

Thus, EPS of ABB Ltd., increases to ₹ 6.29.

So, EPS of ABB Ltd. is increased by ₹ 1.29 (6.29 – 5.00)

Question 54

Following financial information's are available of XP Ltd. for the year 2018:

Equity Share Capital (₹ 10 each)	₹ 200 Lakh
Reserves and Surplus	₹ 600 Lakh
10% Debentures (₹ 100 each)	₹ 350 Lakh
Total Assets	₹ 1200 Lakh
Assets Turnover Ratio	2 times
Tax Rate	30%
Operating Margin	10%
Dividend Payout Ratio	20%
Current Market Price per Equity Share	₹ 28
Required Rate of Return of Investors	18%

You are required to:

1. Prepare Income Statement for the year 2018.
2. Determine its Sustainable Growth Rate.
3. Determine the fair price of the company's share using Dividend Discount Model.
4. Give your opinion on investment in the company's share at current price.

(May 19, 8 Marks)

Solution

Workings:

Asset turnover ratio	=	2 times
Total Assets	=	₹ 1,200 Lakh
Turnover ₹ 1200 lakhs X 2	=	₹ 2,400 lakhs
Interest on Debentures	=	350 lakh X 10% = 35 lakhs
Operating Margin	=	10%
Hence operating cost	=	(1 – 0.10) 2,400 lakhs = ₹ 2,160 lakhs
Dividend Payout	=	20%
Tax Rate	=	30%

1. Income statement

	(₹ Lakhs)
Sale	2,400
Operating Exp	2,160
EBIT	240
Interest	35
EBT	205
Tax @ 30%	61.5
EAT	143.5
Dividend @ 20%	28..7
Retained Earnings	114.8

2.

$$SGR = \text{Return on Equity } (1 - \text{Dividend Payout Ratio})$$
$$= ROE\ (1 - b)$$

$$ROE = \frac{PAT}{NM}$$ and NW = ₹ 200 lakhs + ₹ 600 lakhs = ₹ 800 lakhs

$$ROE = \frac{₹.\ 143.5\ Lakhs}{₹\ 800\ Lakhs} \times 100 = 17.94\%$$

$$SGR = 0.1794\ (1 - 0.20) = 14.35\%$$

$$\text{or } \frac{0.1794 \times 0.80}{1 - 0.1794 \times 0.80} = \frac{0.14352}{0.85648} = 16.76\%$$

3. Calculation of fair price of share using dividend discount model

$$P_0 = \frac{D_0\ (1 + g)}{K_e - g}$$

$$\text{Dividends} = \frac{₹\ 28.7\ Lakhs}{20\ Lakhs} = 1.435$$

Growth Rate = 14.35% or 16.76%

$$\text{Hence } P_0 = \frac{1.435\ (1 + 1.435)}{} = \frac{₹\ 1.64}{} = ₹\ 44.93 \text{ or } 44.96$$

$$\text{OR} \quad \frac{1.435\,(1+0.1676)}{0.18-0.1676} = \frac{₹\,1.676}{0.0124} = \sqrt{\frac{0.18-0.1435}{0.0365}} = ₹\,135.16 \text{ or } 135.12$$

4. Since the current market price of share is ₹ 28, the share is undervalued. Hence, the investor should invest in the company.

Question 55

Following information is available of M/s. TS Ltd.

	(₹ in Crores)
PBIT	5.00
Less: Interest on Debt (10%)	1.00
PBT	4.00
Less: Tax @ 25%	1.00
PAT	3.00
No. of outstanding shares of ₹ 10 each	40 Lakhs
EPS (₹)	7.5
Market price of share (₹)	75
P/E Ratio	10 Times

TS Ltd. has an undistributed reserve of ₹ 8 crores. The company required ₹ 3 crores for the purpose of purpose of expansion which is expected to earn the same rate of return on capital employed as present. However, if the debt to capital employed ratio is higher than 35%, then P/E ratio is expected to decline to 8 Times and rise in the cost of addition debt to 14%. Given this data which of the following options the company would prefer, and why?

Option i. If the required amount is raised through debt

Option ii. If the required amount is raised through equity and the new shares be issued at a price of ₹ 25 each.

(Nov 19, 8 Marks)

Solution

Working Notes

1. Calculation of Return on Capital Employed (ROCE)

	(₹ in crores)
Capital Employed:	
Share Capital (₹ 10 X 40 lakhs)	4
Reserves	8
Debt (₹ 1 cr. X 100/10)	10
	22
PBIT	5
ROCE	22.73%

2. Revised PBIT

Existing Capital Employed	22
Additional	3
ROI	22.73%
Revised PBIT	5.6825

3. New Debt/Equity

Existing Debt	10
Additional Under Option (i)	3
Total Debt	13
Total Equity	12

New Debt to Capital Employed Ratio

$$= \frac{13}{25} = 0.52$$

So, P/E Ratio to be reduced to 8 times

4. Debt to Capital Employed Ratio in Option (ii)

$$= \frac{10}{25} = 0.40$$

So, P/E Ratio to be reduced to 8 times in this case also

5. Number of additional shares to be issued in case of Option (ii)

Funds to be raised ₹ 3 crore

Price per share ₹ 25

New Debt to Capital Employed Ratio

$$= \frac{₹\ 3\ \text{crore}}{₹\ 25} = 12\ \text{lakhs}$$

Particulars	Option (i)	Option (ii)
PBIT (Revised) (₹ Crore)	5.6825	5.6825
Less: Interest on Debt	1.42	1.00
PBT (₹ Crore)	4.2625	4.6825
Tax @ 25% (₹ Crore)	1.0656	1.1706
PAT (₹ Crore)	3.1969	3.5119
No. of shares outstanding	40 lakhs	52 lakhs
EPS	₹ 7.99	₹ 6.75
P/E Ratio	8	8
New Share Price	₹ 63.92	₹ 54.00

Decision:

Since the MPS is expected to be more in the case of additional financing done through debt (Option – I) Option – I is preferred.

Question 56

Mr. X, a financial analyst, intends to value the business of PQR Ltd. in terms of the future cash generating capacity. He has projected the following after tax cash flows:

Year	1	2	3	4	5
Cashflow (₹ in lakh)	1,760	480	640	860	1,170

It is further estimated that beyond 5th year, cash flows will perpetuate at a constant growth rate of 8% per annum, mainly on account of inflation. The perpetual cash flow is estimated to be ₹ 10,260 lakh at the end of the 5th year.

Required:

1. What is the value of the firm in terms of accepted future cash flow? If the cost of capital of the firm is 20%.
2. The firm has outstanding debts of ₹ 3620 lakh and cash / bank balance of ₹ 2710 lakhs.

Calculate the shareholder value per share if the number of is outstanding share is 151.50 lakhs.

1. The firm has received a take over bid from XYZ Ltd. of ₹ 225 per share. Is it a good offer?

(Given: PVIF at 20% for year 1 to year 5: 0.833, 0.694, 0.579, 0.482, 0.402)

(Nov 19, 8 Marks)

Solution

1. Value of firm

Year	Cash Flow (₹ in lakhs)	PVF	PV (₹ in lakhs)
1	1,760	0.833	1,466.08
2	480	0.694	333.12
3	640	0.579	370.56
4	860	0.482	414.52
5	1,170	0.402	470.34
PV of Cash flows upto year 5			3,054.62

If PV of Terminal Value is considered with the growth rate (at the end of 5th year)

$$= \frac{10{,}260\ (1+0.08)}{0.20-0.08} = \frac{11{,}080{,}80}{0.12} = \text{₹ } 92{,}340 \text{ lakh}$$

Now, PV (at the beginning of the year)
= ₹ 92,340 X 0.402
= ₹ 37,120.68 Lakhs

So, Present Value of the firm
= ₹ 3,054.62 + ₹ 37,120.68
= ₹ 40,175.30 Lakhs

2. Value per share

$$= \frac{\text{Value of Firm – Value of Debt}}{\text{No of shares}}$$

$$= \frac{40{,}175.30 - 3{,}620}{151.50}$$

$$= ₹\ 241.29$$

3. Takeover bid of ₹ 225 per share seems to be not a good offer as it is lesser than the intrinsic value i.e. value per share of ₹ 241.29.

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