CHAPTER 33

Solved Problems

P.33.14 The following information is provided related to the acquiring firm A Ltd. and the target firm T Ltd:

Particulars	*Firm A*	*Firm T*
EAT (Rs lakh)	1,000	200
Number of shares outstanding (in lakh)	100	50
EPS (Rs)	10	4
P/E ratio (times)	10	5
MPS (Rs)	100	20

(a) What is the swap ratio based on current market prices?
(b) What is the EPS of A Ltd after acquisition?
(c) What is the expected market price per share (MPS) of A Ltd after acquisition, assuming P/E ratio of Firm A remains unchanged.
(d) Determine the market value of the merged firm.
(e) Calculate gain/loss for shareholders of the two independent companies, after acquisition.
(f) Determine the upper and lower limits for swap ratio beyond which the two firms would not go for the acquisition/merger.

Solution

(a) Exchange ratio based on market prices = Rs 20/Rs 100 = 0.2:1. For every one share of Firm T, 0.2 share will be issued in Firm A. Based on this ratio, the number of new shares issued by Firm T will be = 50 lakh × 0.2 = 10 lakh.
(b) EPS after the merger (EPSc) = = Rs 10.91
(c) Expected MPS after merger = Rs 10.91 × 10 = Rs 109.10
(d) Market value of merged firm = Rs 109.10 MPS × 110 lakh shares = Rs 120.01 crore.

(e) Gains from the merger *(Rs crore)*

Post-merger market value of the firm		Rs 120.01
Less: Pre-merger market value:		
Firm A (100 lakh shares × Rs 100 MPS)	Rs 100	
Firm T (50 lakh shares × Rs 20 MPS)	10	110.00
Gains from merger		10.01

Apportionment of gains from merger among shareholders	*(Rs crore)*
Firm A:	
Post-merger market value (100 lakh shares × Rs 109.10 MPS)	109.10
Less: Pre-merger market value	100.00
Gains to the shareholders of Firm A	9.10
Firm B:	
Post-merger market value (10 lakh shares × Rs 109.10)	10.91
Less: Pre-merger market value	10.00
Gain to the shareholders of Firm T	0.91

(f) Determination of upper limit and lower limit of share exchange ratio	*(Rs crore)*
(i) Lower limit (based on total gains accruing to shareholders of Firm A)	
Total market value of the merger firm	Rs 120.01
Less: Pre-merger (or minimum post-merger) value acceptable to shareholders of Firm T	10.00
Maximum acceptable post-merger market value of Firm A	110.01
Divided by the number of equity shares outstanding in Firm A	100
Post-merger MPS (Rs 110.01 crore/100 lakh)	110.01
Number of equity shares required to be issued in Firm A to have the desired MPS of Rs 110.01 and to have a post-merger value of Rs 10 crore of Firm T, that is, (Rs 10 crore/Rs 110.01) = 9,09,008.27	9,09,009 shares
Existing number of equity shares of Firm T	50

Share exchange ratio (9,09,009/50 lakh) = 0.1818: 1 or 1: 5.5

For every 5.5 shares of Firm T, 1 share in Firm A will be issued. This is the lowest exchange ratio acceptable to shareholders of Firm T. Any ratio lower than this will decrease their existing wealth of Rs 10 crore.

(ii) Upper limit (based on total gains accruing to shareholders of Firm T)

Total market value of the merged firm	Rs 120.01
Less: Pre-merger (or minimum post-merger) value acceptable to the shareholders of Firm A	100.00
Maximum acceptable post-merger market value of Firm T	20.01
Since post-merger market value of Firm A remains unchanged at Rs 100 crore (and so the number of its shares (100 lakh) and MPS of Rs 100), number of equity shares required to be issued in Firm A to have a MPS of Rs 100 and to have a post-merger value of Rs 20.01 crore of Firm T (Rs 20.01 crore/ Rs 100 MPS)	20,01,000 shares
Existing number of equity shares outstanding in Firm T	50 lakh
Share exchange ratio (20,01,000/50 lakh) = 0.4002:1 or	1: 2.5

For every 2.5 shares of Firm T, 1 share in Firm A will be issued. This is the upper most exchange ratio acceptable to shareholders of Firm A as any ratio higher than this will dilute their existing wealth of Rs 100 crore.

P.33.15 Company X is contemplating the purchase of Company Y. Company X has 3,00,000 shares having a market price of Rs 30 per share while Company Y has 2,00,000 shares selling at Rs 20 per share. The EPS are Rs 4.00 and Rs 2.25 for Company X and Y, respectively. Managements of both companies are discussing two alternative proposals for exchange of shares as indicated below:

(i) in proportion to the relative earnings per share of two companies.

(ii) 0.5 share of Company X for one share of Company Y (.5 :1).

You are required: (i) to calculate the Earnings Per Share (EPS), after merger, under two alternatives and (ii) to show the impact on the EPS for the shareholders of two companies under both the alternatives.

Solution

(i) (a) Determination of post-merger earnings

Company 1	*Original number of shares* 2	*EPS* 3	*Total earnings after taxes (2 × 3)* 4
X	3,00,000	Rs 4.00	Rs 12,00,000
Y	2,00,000	2.25	4,50,000
Total post-merger earnings			16,50,000

(b) Post-merger EPS when share exchange ratio is in relative proportion to pre-merger EPS, 0.5625 that is Rs 2.25/4.00

Total post-merger earnings (with no synergy assumed)	Rs 16,50,000
Divided by total number of shares after the merger (3,00,000 + 1,12,500 i.e., 2,00,000 × 0.5625)	4,12,500
Combined EPS after merger (Rs 16,50,000/4,12,500 shares)	4

(c) Post-merger EPS when share exchange ratio is 0.5

Total post-merger earnings	Rs 16,50,000
Divided by total number of shares after the merger (3,00,000 + 1,00,000 i.e., 2,00,000 × 0.5)	4,00,000
Combined EPS after merger (Rs 16,50,000/4,00,000 shares)	4.125

(ii) (a) Impact on EPS of the shareholders of Company X and Company Y when share exchange ratio is 0.5625

Shareholders of company X:	
EPS before the merger	Rs 4.00
EPS after the merger (Rs 16,50,000/4,12,500 shares)	4.00
Shareholders of Company Y:	
EPS before the merger	2.25
Equivalent EPS after the merger (EPS after the merger × shares exchange ratio, i.e., Rs 4 × 0.5625)	2.25
There is no change in EPS for shareholders of Company X or Company Y	

(b) Impact of EPS on the shareholders of Companies X and Y when share exchange ratio is 0.5

Shareholders of Company X:	
EPS after the merger (Rs 16,50,000/4,00,000 shares)	Rs 4.125
EPS before the merger	4.000
Accretion in EPS	0.125
Shareholders of Company Y:	
EPS before the merger	Rs 2.25
Equivalent EPS after the merger (Rs 4.125 × 0.5)	2.0625
Dilution in EPS	(0.1875)
While the shareholders of Company X gain, the shareholders of Company Y lose.	

P.33.16 Nelson Electronic Company acquires Borton Electronic Company on 'share for share exchange' basis. The position before takeover was as under:

Particulars	*Nelson Electronic company*	*Borton Electronic company*
Number of shares	20,000	10,000
Total earnings (Rs)	2,00,000	1,00,000
Market price of share, MPS (Rs)	20	15

The shareholders of Borton Electronic Company are offered 7,500 shares of Nelson Electronic Company for 10,000 shares (i.e. each shareholder of Borton Electronic Company gets 0.75 shares of Nelson Electronic Company for 1 share of Borton Electronic Company).

You are required to calculate the EPS of the amalgamated company *vis-a-vis* before takeover position of the two companies and the gain/loss of the shareholders of the two independent companies consequent to amalgamation.

Solution

(a) EPS of companies before and after takeover

Particulars	*Before takeover*	*After takeover*	
	Nelson	*Borton*	*Combined*
Total earnings (Rs)	2,00,000	1,00,000	3,00,000
Divided by Number of shares (N)	20,000	10,000	27,500
EPS (Rs)	10	10	10.91

(b) Gain/loss to shareholders

(i) In terms of EPS:

Nelson Electronic (Rs 10.91 – Rs 10) = Re 0.91 (Gain)

Borton Electronic:

EPS before merger	Rs 10.00
Less: Equivalent EPS after merger (Rs 10.91 × 0.75, share exchange ratio)	8.18
Loss	(1.82)

(ii) In terms of valuation:

Valuation after merger (27,500 shares × Rs 240/11) (assuming Nelson maintains its existing P/E ratio of 2 i.e. Rs 20 ÷ Rs 10)	Rs 6,00,000	
Less: Pre-merger market value:		
Nelson (20,000 × Rs 20)	4,00,000	
Borton (10,000 × Rs 15)	1,50,000	5,50,000
Total gain from the merger		50,000
Apportionment of gains:		
	Nelson	Borton
Post-merger value	4,36,363.63@	1,63,636.37 @@
Less: Pre-merger value	4,00,000.00	1,50,000.00
Gain	36,363.63	13,636.37

@20,000 shares × Rs 240/11; @@ 7,500 shares × Rs 240/11 (market price of share)

P.33.17 From the following data, calculate the cost of merger.

Particulars	*Firm A*	*Firm B*
Market price per share	Rs 60	Rs 15
Number of shares	1,00,000	50,000

Market value of the firm	6,00,000	7,50,000

Firm A intends to pay Rs 10,00,000 cash for acquisition of Firm B.

Solution Cost = Cash – PV_B = Rs 10,00,000 – Rs 7,50,000 = Rs 2,50,000

Review Questions

33.24 Hypothetical Ltd (HL) wishes to acquire Target Ltd (TL), a small company with good growth prospects. The relevant information for both companies is as follows:

Company	*Equity shares outstanding*	*Share price*	*Earnings after taxes (EAT)*	*Earnings per share (EPS)*
Hypothetical Ltd	10,00,000	Rs 25	Rs 20,00,000	Rs 2
Target Ltd	1,00,000	10	2,00,000	2

Hypothetical Ltd is considering three different acquisition plans:
(i) Pay Rs 12.5 per share for each share of TL.
(ii) Exchange Rs 25 cash and one share of HL for every four shares of TL.
(iii) Exchange one share for every two shares of TL.

What will HL's EPS be under each of the three plans? What will the share prices of HL be under each of the three plans, if its current P/E ratio remains unchanged?

33.25 XYZ Ltd is considering merging with ABC Ltd. XYZ's shares are currently traded at Rs 25, it has 2,00,000 shares outstanding and its earnings after taxes (EAT) amount to Rs 4,00,000. ABC has 1,00,000 shares outstanding; its current market price is Rs 12.5, and its EAT are Rs 1,00,000. The merger will be effected by means of a stock swap (exchange). ABC has agreed to a plan under which XYZ will offer the current market value of ABC Ltd's shares.
(i) What is the pre-merger earnings per share (EPS) and P/E ratios of both the companies?
(ii) If ABC's P/E ratio is 8, what is its current market price? What is the exchange ratio? What will XYZ's post-merger EPS be?
(iii) What must the exchange ratio be for XYZ's pre- and post-merger EPS to be the same?

33.26 A Ltd is contemplating to acquire T Ltd. The following data has been assembled in this connection:

Particulars	*A Ltd*	*T Ltd*
Earnings per share (EPS)	Rs 2	Rs 1
Expected growth in EPS	0.05	0.10
Number of equity shares outstanding (lakh)	10	3
Price per share	20	15

(i) If A Ltd acquires T Ltd on the basis of exchange of shares in proportion to their market values, what will the new EPS be?
(ii) Assuming no synergic gains, construct a schedule of EPS for the next 10 years with and without the acquisition. How long would it take to eliminate the dilution in EPS? Do you think the acquisition offer is attractive?

33.27 A Ltd is acquiring all the outstanding equity shares of T Ltd by exchanging one share of its own equity shares for each share of T Ltd A Ltd has a policy of keeping 50 per cent of its capital structure in debt. The capital structure of both these firms before the merger is as follows (in Rs lakh):

Particulars	*A Ltd*	*T Ltd*
Equity capital (of Rs 100 each)	20	5
Retained earnings	25	25
14% Preference shares	5	—
13% Debt	50	—

(i) What will the capital structure of the merged firm be? Determine the percentage share of debt in the merged firm.
(ii) Has the merged firm's financial risk declined?
(iii) How much additional debt can the combined firm borrow to retain a capital structure, 50 per cent of which is debt?

33.28 From the following data, calculate the true cost of acquiring firm A Ltd

Particulars	*A Ltd*	*T Ltd*

Market price per share	Rs 80	Rs 20
Number of shares	5,00,000	4,00,000
Market value (MV)	4,00,00,000	80,00,000

A Ltd intends to pay Rs 50 lakh in cash and its 60,000 shares in exchange for 4 lakh shares of T Ltd.

33.29 A Ltd is planning to acquire T Ltd. The relevant financial details of the two firms prior to merger announcement are as follows:

Particulars	*A Ltd*	*T Ltd*
Market price per share	Rs 150	Rs 60
Number of shares	1 lakh	50,000

The merger is expected to yield gains with present value of Rs 20 lakh. A Ltd offers 25,000 shares in exchange of 50,000 shares of T Ltd.

You are required to determine:

(i) Total value of combined firm (AT Ltd) after merger;

(ii) Gains to the shareholders of A Ltd and T Ltd ;

(iii) True cost of acquiring T Ltd; and

(iv) NPV of the merger for shareholders of T Ltd.

33.30 A Ltd is considering the purchase of T Ltd. The free cash flows to firm (FCFF) for T Ltd are estimated to be Rs 15 lakh per year in the future. This forecast by A Ltd includes expected merger synergic gains. T Ltd currently has total assets of Rs 50 lakh with 20 per cent being financed with debt funds. A Ltd's pre-merger weighted average cost of capital is 15 per cent.

(i) Based on A Ltd's pre-merger cost of capital, what is the maximum purchase price that A Ltd would be willing to pay to acquire T Ltd?

(ii) Assume that by acquiring T Ltd, A Ltd will move towards an optimal capital structure such that its weighted average cost of capital will be 12 per cent after the acquisition. Under these conditions, what would be the maximum price A Ltd should be willing to pay?

(iii) Assume that FCFF for T Ltd estimated at Rs 15 lakh for the coming year, will grow at a rate of 20 per cent per year for the following 2 years, and will be on level thereafter. Each rupee increase in cash flows will require Re 0.7 incremental investment in assets. Estimate the maximum purchase price of T Ltd based on a 12 per cent cost of capital.

Answers

33.24 (i)EPS: Rs 2.2 (Plan 1), Rs 2.146 (Plan 2) and Rs 2.095 (Plan 3)
(ii)MPS Rs 27.5 (Plan 1), Rs 26.82 (Plan 2) and Rs 26.19 (Plan 3).

33.25 (i)Pre-merger EPS Rs 2 (XYZ), Re 1 (ABC)
P/E ratio 12.5 times (both for XYZ and ABC)
(ii)Current market price Rs 8 (ABC); Exchange ratio 3.125; Post-merger EPS of XYZ Ltd. Rs 2.16.
(iii)Desired exchange ratio is 0.5.

33.26 (i)New EPS will be Rs 1.88.
(ii) Dilution in EPS will be eliminated after 8 years. The acquisition does not seem to be an attractive proposition for A Ltd.

33.27 (i) 38.5 per cent (ii) Yes, financial risk has declined due to lower debt-ratio of the merged firm (iii) Rs 30 lakh.

33.28 Rs 18 lakh.

33.29 (i) Rs 200 lakh, (ii) Rs 160 lakh (A Limited), Rs 40 lakh (T limited) (iii) Rs 10 lakh (iv) Rs 10 lakh.

33.30 (i) Rs 90 lakh (ii) Rs 115 lakh (iii) Rs 157.81 lakh app.f