CHAPTER 20

Solved Problems

P.20.6 The Modern Chemicals Ltd requires Rs 25,00,000 for a new plant. This plant is expected to yield earnings before interest and taxes of Rs 5,00,000. While deciding about the financial plan, the company considers the objective of maximising earnings per share. It has three alternatives to finance the project—by raising debt of Rs 2,50,000 or Rs 10,00,000 or Rs 15,00,000 and the balance, in each case, by issuing equity shares. The company's share is currently selling at Rs 150, but is expected to decline to Rs 125 in case the funds are borrowed in excess of Rs 10,00,000. The funds can be borrowed at the rate of 10 per cent upto Rs 2,50,000, at 15 per cent over Rs 2,50,000 and upto Rs 10,00,000 and at 20 per cent over Rs 10,00,000. The tax rate applicable to the company is 50 per cent. Which form of financing should the company choose?

Solution

Earnings Per Share (EPS) under proposed financial alternatives

Particulars	*Financial alternatives to raise Rs 25 lakh*		
	I (Raising debt of Rs 2.5 lakh + Equity of Rs 22.5 lakh)	*II (Raising debt of Rs 10 lakh + Equity of Rs 15 lakh)*	*III (Raising debt of Rs 15 lakh + Equity of Rs 10 lakh)*
Expected EBIT	Rs 5,00,000	Rs 5,00,000	Rs 5,00,000
Less: Interest[1]	25,000	1,37,500	2,37,500
Earnings before taxes	4,75,000	3,62,500	2,62,500
Less: Taxes	2,37,500	1,81,250	1,31,250
Earnings after taxes (EAT)	2,37,500	1,81,250	1,31,250
Number of shares[2]	15,000	10,000	8,000
Earnings per share (EPS)	15.833	18.125	16.406

Recommendation Financing option II (raising debt of Rs 10 lakh and issue of equity share capital of Rs 15 lakh) is the best option as it maximises the EPS.

Working Notes

(1)	Determination of interest:			
	Plan **I**	(Rs 2,50,000 × 0.10)	Rs 25,000	
	Plan **II**	(Rs 2,50,000 × 0.10)	Rs 25,000	
		(Rs 7,50,000 × 0.15)	1,12,500	1,37,500
	Plan **III**	(Rs 2,50,000 × 0.10)	25,000	
		(Rs 7,50,000 × 0.15)	1,12,500	
		(Rs 5,00,000 × 0.20)	1,00,000	2,37,500
(2)	Number of equity shares to be issued			
	Plan **I**	(Rs 22,50,000/Rs 150 Market price per share)		15,000
	Plan **II**	(Rs 15,00,000/Rs 150 Market price per share)		10,000
	Plan **III**	(Rs 10,00,000/Rs 125 Market price per share)		8,000

P.20.7 Harbour company, is a medium-sized producer of chemicals and vinyl coatings used in a variety of industrial processes.

Last year, the company recorded over Rs 1,500 lakh in sales, showed net income after tax of Rs 250 lakh and concluded a very successful year. For the year coming up, the firm expects a 10 per cent improvement in its sales and operating income figures. Other relevant details—total assets Rs 2,200 lakh, debt assets ratio (i.e. total debts including current liabilities) 31.8 per cent, earnings per share Rs 3.16 (No. of equity shares of Rs 10 paid up 80 lakh); dividend per share Rs 1.50 (These all relate to the last year).

Harbour Co. has been invited to bid on a long-term contract to produce a line of plastics for a large chemical company. It appears that the firm can easily get Rs 600 lakh contract, which will yield an additional Rs 180 lakh in operating income (EBIT). These figures are for next year only and the firm estimates even higher sales and profits in future years. The production manger knows of a small plastics company located about three kilometres away from the present factory and has all the equipments needed to produce the new line of plastics and the company is presently for sale with a Rs 1,050 lakh asking price (which represents largely the value of the assets). This company is available at the negotiated price of Rs 900 lakh.

Harbour Co. has sufficient working capital to add the new plastic line, but does not have the cash to buy Rs 900 lakh for machinery and equipment. The following financing options are available.

(i) Harbour Co. can borrow Rs 400 lakh through a 12 per cent mortgage on its main facilities. A mortgage company has indicated that it would help finance the plastic machinery with a Rs 500 lakh, 12 per cent mortgage. Harbour as per its policy wants to keep debt asset ratio below 40 per cent.

(ii) The company can probably issue upto Rs 1,000 lakh in 13 per cent preferred stock or class A equity shares. If equity shares are issued, it could net Rs 50 per share.

Harbour Co. shares has traditionally traded at a 15/1 price-earnings multiple and it is expected that this will hold in the future. (Corporate income-tax 50 per cent)

Required:

1. Analysis needed to decide whether to accept the plastic project.
2. Recommendation on the financing method of the project.

Solution

(1) Commercial profitability of proposed plastics project:

ROR on new project = (EBIT/Investment) × 100

Rs 180 lakh/900 lakh = 20 per cent

To assess its acceptance, it will be useful to compare the ROR of this project with its existing ROR.

EAT	Rs 250 lakh
EBT	Rs 250 lakh/0.50 = Rs 500 lakh
EBIT	Rs 500 lakh + Interest on borrowed funds

Borrowed funds are 31.8 per cent of Rs 2,200 lakh = Rs 700 lakh

Since the rate of interest on debt is not provided, we are constrained to determine interest amount. Accordingly, the value of ROR computed will be lower based on the figure of Rs 500 lakh (EBT)

ROR = Rs 500 lakh/Rs 2,200 lakh = 22.73 per cent.

To make the picture comparable, let us assume interest rate of 10 per cent on debt. ROR (revised) is Rs 500 lakh + 0.10 (Rs 700 lakh)/Rs 2,200 lakh = 25.91 per cent.

Though the projected ROR on plastic project is lower than the ROR earned by the project, it is still worth accepting given the fact that the cost of funds is (likely) lower than rate of return earned. This apart, it is equally important to recognise that the firm expects higher sales and profits in the coming years

(2) Financing method

The firm will opt for such a financing option (mix) which helps it to maximse market price of its equity shares (MPS). The following statement is prepared to determine MPS under three alternative options.

Determination of MPS under various financing options

(Amount in Rs lakh)

Particulars	*Financing options to raise Rs 900 lakh*		
	12% Debt	*13% Preference Shares*	*18 lakh Equity shares*
Expected EBIT	180	180	180
Less: Interest on debt	108	—	—
Earnings before taxes	72	180	180
Less: Taxes (50%)	36	90	90
Earnings after taxes	36	90	90
Add: Existing EAT	250	250	250
Profits available to shareholders	286	340	340
Less: Preference dividends	—	117	—
Earnings for equityholders	286	223	340
Number of equityshares	80	80	98
EPS	3.575	2.7875	3.4934
P/E ratio (times)	15	15	15
Market price per share	Rs 53.625	Rs 41.8125	Rs 52.401

Debt option is the best alternative as it maximises MPS. However, the company cannot opt for Rs 900 lakh debt as it causes an increase in debt-asset ratio of the company to 51.6 per cent [(Rs 700 lakh + Rs 900 lakh) ÷ (Rs 2,200 lakh + Rs 900 lakh) *vis-à-vis* its policy of having its debt-asset ratio below 40 per cent. Accordingly, the maximum debt possible to be tapped is (40% × Rs 3,100 lakh assets after plastic project – Existing debt of Rs 700 lakh) = Less than Rs 540 lakh.

In such circumstances the firm is to opt for hybrid type of financing. The feasible mix may be Rs 500 lakh debt and Rs 400 lakh equity consist of 8 lakh shares @ Rs 50 per share (preference option is not considered as it has minimum EPS as well as minimum MPS).

Statement showing MPS under debt + equity financing options

(Amount in Rs lakh)

Particulars	*Amount*
Expected EBIT	180
Less: Interest on debt (Rs 500 lakh × 12%)	60
EBT	120
Less: Taxes	60
EAT	60
Add: Existing EAT	250
Total EAT available to equityholders	310
Divided by number of equity shares (80 lakh + 8 lakh)	88
EPS (Rs 310 lakh/88 lakh shares)	3.5227
Multiply by P/E ratio (times)	15
MPS	52.84
Current MPS (Rs 3.16 × 15 times)	47.4
Current issue price indicated	50

Recommendation The statement clearly demonstrates the financial viability of the proposed plastic project as it enhances its current market price of the share. The proposed project should be financed by debt-equity mix of Rs 500 lakh and Rs 400 lakh respectively.