FINANCIAL MANAGEMENT

Suggested Answers
July-August 2024

Answer to the Question# 1(a) (i):

Ex-rights price

	Tk.
4 existing shares @ Tk. 30	120
1 rights share @ Tk. 20	20
	140

The theoretical value of BD Limited's share e-rights is: Tk. 140 /5 = Tk. 28

Answer to the Question# 1(a) (ii):

Value of rights

Value of aa right = Tk. (28 - 20)
= Tk. 8

One right enables a holder to buy share at Tk. 20 which will eventually sell for Tk. 28. The value of the right to buy one share is, therefore, the theoretical value of the rights attached to each existing share is Tk. 2.

Answer to the Question# 1(a) (iii):

Chairman's views:

The chairman is correct. The shareholder should either exercise the rights or sell them.
- If he sells all rights:

	Tk.
Wealth before rights issue (1,000 shares x Tk. 30)	30,000
Wealth after rights issue:	
Value of old shares (1,000 shares x Tk. 28)	28,000
Plus cash from sale of rights (1,000 shares x Tk. 2)	2,000
	30,000

- If he exercises one half of his rights and sells the other half:

	Tk.
Wealth before rights issue (1,000 shares x Tk. 30)	30,000
Wealth after rights issue:	
Value of old shares (1,000 shares x Tk. 28)	28,000
Value of new shares (500 / 4 x Tk. 28)	3,500
Plus cash from sale of rights (1,000 shares x Tk. 2)	1,000
Plus cash from sale of rights (500 shares x Tk. 2)	32,500
Less: cost of purchasing new shares (125 x Tk. 20)	2,500
	30,000

- If he does nothing:

	Tk.
Wealth before rights issue (1,000 shares x Tk. 30)	30,000
Wealth after rights issue:	
Value of old shares (1,000 shares x Tk. 28)	28,000
Reduction in wealth	(2,000)

Answer to the Question# 1(b) (i):

	Current Situation	Non-recourse Factoring	Recourse factoring
Bad debts	15,000,000	-	15,000,000
Admin cost	3,500,000	-	-
Debtors financing (500mn X 12% X 30/365)	4,931,507		
(500m X 75% X 15% X 21/365) + (500 mn X 25% X 12% X 21/365)		4,099,315	
(500 mn X 8% X 30/365)			3,287,671
Factor fee	-	15,000,000	2,500,000
Total Costs	**23,431,507**	**19,099,315**	**20,787,671**
Increase in profitability		**4,332,192**	**2,643,836**

Answer to the Question# 1(b) (ii):

Factoring services can significantly enhance the company's profitability, and opting for such services is a strategic decision. Among the available options, the non-recourse factoring service, despite its higher interest rates and service fees, offers considerable advantages.

This service not only eliminates the risk of bad debts but also reduces the collection time by 30%, which positively impacts cash flow and overall profitability. The increased efficiency and reduced risk outweigh the additional costs, making it a more financially viable option for the company.

Therefore, the company should proceed with the non-recourse factoring service offered by JEMD Finance to maximize its financial stability and operational efficiency.

Answer to the Question# 2(a):

Cost of Equity using CAPM:

$E(\text{Requity}) = rf + \beta \times (rm - rf)$

Given:

- $rf = 4\%$
- $rm = 10\%$
- $\beta = 1.2$

$E(\text{Requity}) = 0.04 + 1.2 \times (0.10 - 0.04)$
$E(\text{Requity}) = 0.04 + 1.2 \times 0.06$
$E(\text{Requity}) = 0.04 + 0.072$
$E(\text{Requity}) = 0.04 + 0.072$
$E(\text{Requity}) = 0.112$ or 11.2%

So, the cost of equity ($E(R\_equity)$) for XYZ Corp. is 11.2%.

Answer to the Question# 2(b):

Weighted Average Cost of Capital (WACC):
$WACC = EV \times E(\text{Requity}) + DV \times Rdebt \times (1 - \text{Tax Rate})$

Where:

- E = Market value of equity = BDT 300,000,000
- D = Market value of debt = BDT 150,000,000

- V = Total market value of firm = E + D = BDT 450,000,000
- E(R_equity) = 11.2% (from part (a))
- R_debt = Interest rate on debt = 6%
- Tax Rate = 30%

$$WACC = [\{(300,000,000 / 450,000,000) \times 0.112\} + \{(150,000,000 / 450,000,000) \times 0.06 \times (1-0.30)\}]$$

$$WACC = \{(0.6667 \times 0.112) + (0.3333 \times 0.06 \times 0.70)\}$$
$$WACC = 0.0747 + 0.014$$
$$WACC = 0.0887 \text{ or } 8.87\%$$

So, the WACC for XYZ Corp. is 8.87%.

Answer to the Question# 2(c):

Evaluation of the New Investment Project:
Net Present Value (NPV):
The new project requires an initial investment of BDT 50 million and generates perpetual cash flows of BDT 12 million annually.

$$NPV = \frac{\text{Cash Flows}}{\text{WACC}} - \text{Initial Investment}$$

Substitute the values:
Annual cash flows = BDT 12 million
WACC = 8.87% = 0.0887
Initial investment = BDT 50 million

$$NPV = \frac{12}{0.0887} - 50$$

NPV = BDT 85.3 million

Impact on Shareholder Wealth and Dividend Policy:

1. **Shareholder Wealth:**
   - The positive NPV of BDT 85.3 million indicates that the project adds value to the firm and increases shareholder wealth.
2. **Dividend Policy:**
   - With a 40% dividend payout ratio, retaining earnings for the investment would temporarily reduce dividends. However, the project's cash flows could eventually support higher dividends.

Modigliani-Miller (MM) Assumptions:
Under MM assumptions:
The project does not change the WACC since the firm maintains the same capital structure.
The increased value of the firm (BDT 85.3 million) will be reflected in higher stock prices, benefiting shareholders.

Optimal Capital Structure:
If the firm can finance the project with retained earnings or debt without significantly increasing its WACC, this will further enhance shareholder value.
The firm should avoid excessive reliance on debt to maintain a healthy balance between risk and return.

Recommendations:
Undertake the project: The project's positive NPV indicates it adds significant value to the firm.
Dividend policy: Temporarily adjust the payout ratio if necessary to fund the project through retained earnings.
Capital structure: Maintain the current mix of debt and equity to keep WACC low and maximize shareholder value.

Answer to the Question# 3(a):

Forward Contract Hedging

Calculation:

Amount in USD required:

USD amount=JPY amount / Forward exchange rate = 500,000,000 / 108 ≈ 4,629,630 USD

Advantages of Forward Contracts:

Provides certainty: Locks in the exchange rate, eliminating uncertainty from currency fluctuations.
Customization: Tailored to the exact amount and timing of the exposure.
No upfront cost: Unlike options, there is no premium payment.
No basis risk

Disadvantages of Forward Contracts:

Lack of flexibility: TechGlobal must honor the contract even if exchange rates move favorably.
Credit risk: Forward contracts are subject to counterparty credit risk unless collateralized.

Answer to the Question# 3(b):

Future Contract Hedging

Calculation:

Amount in USD required:

USD amount=JPY amount / Futures price =500,000,000 / 108 ≈4,629,630 USD

Comparison:

- **Effectiveness:**
  Both forward and futures contracts lock in the same exchange rate (108 JPY/USD), so the financial outcome is identical. However:
  - Futures are standardized and may not perfectly match the exposure (e.g., contract sizes).
  - Futures involve daily margin adjustments, creating cash flow variability.
  - Forwards are more flexible and customizable.

Answer to the Question# 3(c):

Money Market Hedging

Steps:

- Borrow the present value of JPY needed in 6 months.
- Convert the JPY to USD at the current spot rate.
- Invest the USD amount in the USA.
- Repay the JPY loan in 6 months using the JPY from operations or a new loan.

Calculation:

Amount to borrow in JPY:
JPY amount = 500,000,000 / (1+0.01×6/12) ≈497,512,437 JPY

Convert JPY to USD at spot rate:
USD amount= 497,512,437 / 110 ≈ 4,522,840 USD

Amount to invest in USD:
USD amount=4,522,840 × (1+0.03×6/12) ≈4,590,683 USD

Comparison:

- Money market hedging involves the use of existing cash flows and can be complex to execute.
- It provides a natural hedge and can be beneficial if interest rates differ significantly.
- Cost of money market hedging in this case is lower than the forward and future contract and also provides flexibility.

Answer to the Question# 3(d):

Foreign Exchange Option Hedging

1. **How Options Work:**
   - TechGlobal buys a call option to purchase JPY at a strike price of 108 JPY/USD.
   - The option provides the right but not the obligation to buy JPY at this rate, offering downside protection while allowing participation in favorable exchange rate movements.
2. **Calculation:**
   - Option premium = 2% of JPY 500 million = 500,000,000×0.02500,000,000 \times 0.02500,000,000×0.02 = 10,000,000 JPY.
   - Premium in USD = 10,000,000110\frac{10,000,000}{110}11010,000,000 = 90,909 USD.
3. **Benefits of Options:**
   - Flexibility: TechGlobal can choose not to exercise the option if the spot rate is more favorable.
   - Downside protection: Ensures a maximum USD outlay while allowing potential gains if the JPY weakens.
4. **Disadvantage:**
   - Upfront cost: Requires paying a premium (90,909 USD), unlike forward or futures contracts**.**

Answer to the Question# 3(e):

Best Strategy:

The strategy will depend upon the risk attitude of the Company. If the company is risk averse, they will go for Forward Contract or Money Market Hedge. On the other hand, if they are risk taker, they will go for Options that provide an upside.

Answer to the Question# 4(a):

Number of contracts:
LKR 25 million / Tk. 31,250 x 2
= 400 contracts

Answer to the Question# 4(b):

The company needs to buy LKR and therefore needs to sell Taka - a put option.

Answer to the Question# 4(c):

It is currently 1 June - the payment is required in three months i.,e at the end of August.
June options will close out too soon, September contracts are required.

Answer to the Question# 4(d):

The cost of a September put option at LKR 2/Tk. is LKR 0.0157/Tk.
The total cost of 400 contracts is
400 x Tk. 31,250 x LKR 0.0157 / Tk.
= LKR 196,250
Paid now @ LKR 1.97/Tk.
= Tk. 99,619

Answer to the Question# 4(e):

Position in options market

	(i)	(ii)
	LKR / Tk.	LKR / Tk.
Prevailing rate	1.98	2.02
Option - right to sell Taka for	2.00	2.00
Gain	LKR 0.02/Tk.	Zero
	Exercise	Abandon
	LKR 0.02 / Tk.	
	x Tk. 31,250	
	x 400 contracts	
	LKR 250,000	
Position in spot market	LKR	LKR
Amount due to supplier	(25,000,000)	(25,000,000)
Gain an option	250,000	-
Total currency required	(24,750,000)	(25,000,000)
Prevailing spot	LKR 1.98/Tk.	LKR 2.02/Tk.
Cost at prevailing spot	Tk. 12,500,000	Tk. 12,376,237
Plus cost of premium	Tk. 99,619	Tk. 99,619
Total cost	Tk. 12,599,619	Tk. 12,475,856

Answer to the Question# 5(a):

		BDT
Initial investment:		
Installed cost of new press		(2,200,000)
- After-tax proceeds from sale of old asset Proceeds from sale of existing press		1,200,000
+ Taxes on sale of existing press (W-1)		(480,000)
Initial investment		**1,480,000**
Working-1: Taxes on sale of existing press:		
* Capital Gain =	1,200,000 - 1,000,000 =	200,000
Recaptured Depreciation (1,000,000 – Book Value 0)		1,000,000
Taxable amount on old press sales		1,200,000
Tax on sale of old press @40%		480,000

Answer to the Question# 5(b):

Calculation of Operating Cash Flows

Year	Revenues	Expenses	Depreciation	Balancing allowance	Net profit before taxes	Taxes	Net profit after taxes	Cash Flow
1	1,600,000	800,000	440,000		360,000	144,000	216,000	**656,000**
2	1,600,000	800,000	704,000		96,000	38,400	57,600	**761,600**
3	1,600,000	800,000	422,400		377,600	151,040	226,560	**648,960**
4	1,600,000	800,000	253,440		546,560	218,624	327,936	**581,376**
5	1,600,000	800,000	152,064		647,936	259,174	388,762	**540,826**
6	-	-	45,619	182,477	(228,096)	(91,238)	(136,858)	**91,238**
								3,280,000

Answer to the Question# 5(c):

Payback period = 2 years + (62,400 ÷ 648,960) = 2.1 years

Answer to the Question# 5(d):

PV of Cash Flows

Year	CF	PVIF	PV
1	656,000	0.901	591,056
2	761,600	0.812	618,419
3	648,960	0.731	474,390
4	581,376	0.659	383,127
5	540,826	0.593	320,710
6	91,238	0.535	48,813
		PV	**2,436,514**
		NPV	**956,514**

IRR = 34.94%

Answer to the Question# 5(e):

The NPV is a positive BDT 956,514 and the IRR of 34.94% is well above the cost of capital of 11%. Based on both decision criteria, the project should be accepted.

Answer to the Question# 6(a):

Year	0	1	2	3	4	5
	Tk.	Tk.	Tk.	Tk.	Tk.	Tk.
Operating cash flow	-	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Sale of head office	2,000,000	-	-	-	-	-
Synergetic benefits	-	200,000	200,000	200,000	200,000	200,000
Disposal	-	-	-	-	-	5,000,000
Net cash flow	2,000,000	1,200,000	1,200,000	1,200,000	1,200,000	6,200,000
PVF at 20%	1.000	0.833	0.694	0.579	0.482	0.402
Present value	2,000,000	999,600	832,800	694,800	578,400	2,492,400

Present value	Tk. 7,598,000
Less value of loan stock	(Tk. 1,500,000)
Maximum value of Target	Tk. 6,098,000

Notes:

1. The estimated disposal value of Target is included to compensate for Arrow's short planning horizon. It is assumed that the estimated disposal value is an approximation of the present value of cash flows from year 6 onwards.
2. The present value of the cash inflows is Tk. 7.598 million. This is generated by a company funded by equity and debt. Therefore, the market value of loan stock has to be deducted from the total value of the business to arrive at an equity value.

Answer to the Question# 6(b):

Year	1	2	3	4	5+
	Tk.	Tk.	Tk.	Tk.	Tk.
Sales (note 1)	605,000,000	653,400,000	686,070,000	706,652,100	
Operating profit	60,500,000	78,408,000	82,328,400	84,798,252	
Tax	(12,705,000)	(16,465,680)	(17,288,964)	(17,807,633)	
Operating cash flows	47,795,000	61,942,320	65,039,436	66,990,619	
Inc. non-current assets expenses (note 1)	8,700,000	(1,936,000)	(653,400)	(411,642)	
Inc. working capital investment (note 1)	(2,200,000)	(1,452,000)	(653,400)	(411,642)	
Free Cash Flows	54,295,000	58,554,320	63,732,636	66,167,335	860,175,356
Discount factor	0.926	0.857	0.794	0.735	0.735
Present value	50,277,170	50,181,052	50,603,713	48,632,991	632,228,887

Total present value	Tk. 831,923,813
Value of equity	Tk. (831,923,813 - 225,000,000)
	= Tk. 606,923,813
Value per share	= Tk. 606,923,813/5,000,000
	= Tk. 121.38

Working note:

Year	0	1	2	3	4
	Tk.	Tk.	Tk.	Tk.	Tk.
Sales (increasing at given rates)	550,000,000	605,000,000	653,400,000	686,070,000	706,652,100
Sales increase		55,000,000	48,400,000	32,670,000	20,582,100
Incr. non-current assets expenses		3,300,000	1,936,000	653,400	411,642
Non-current assets sale in year 1		(12,000,000)	-	-	-
Total		(8,700,000)	1,936,000	653,400	411,642
Inc. working capital investment		2,200,000	1,452,000	653,400	411,642

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