

PAPER – 8: FINANCIAL MANAGEMENT AND ECONOMICS FOR FINANCE

PART A: FINANCIAL MANAGEMENT

QUESTIONS

Ratio Analysis

1. FM Ltd. is in a competitive market where every company offers credit. To maintain the competition, FM Ltd. sold all its goods on credit and simultaneously received the goods on credit. The company provides the following information relating to current financial year:

Debtors Velocity	3 months
Creditors Velocity	2 months
Stock Turnover Ratio (on Cost of Goods Sold)	1.5
Fixed Assets turnover Ratio (on Cost of Goods Sold)	4
Gross Profit Ratio	25%
Bills Receivables	₹ 75,000
Bills Payables	₹ 30,000
Gross Profit	₹ 12,00,000

FM Ltd. has the tendency of maintaining extra stock of ₹ 30,000 at the end of the period than that at the beginning.

DETERMINE:

- (i) Sales and cost of goods sold
- (ii) Sundry Debtors
- (iii) Closing Stock
- (iv) Sundry Creditors
- (v) Fixed Assets

Cost of Capital

2. The information relating to book value (BV) and market value (MV) weights of Ex Limited is given below:

Sources	Book Value (₹)	Market Value (₹)
Equity shares	2,40,00,000	4,00,00,000
Retained earnings	60,00,000	-
Preference shares	72,00,000	67,50,000
Debentures	18,00,000	20,80,000

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Additional information:

- I. Equity shares are quoted at ₹ 130 per share and a new issue priced at ₹ 125 per share will be fully subscribed; flotation costs will be ₹ 5 per share on face value.
- II. During the previous 5 years, dividends have steadily increased from ₹ 10 to ₹ 16.105 per share. Dividend at the end of the current year is expected to be ₹ 17.716 per share.
- III. 15% Preference shares with face value of ₹ 100 would realise ₹ 105 per share.
- IV. The company proposes to issue 11-year 15% debentures but the yield on debentures of similar maturity and risk class is 16%; flotation cost is 2% on face value.
- V. Corporate tax rate is 30%.

You are required to DETERMINE the weighted average cost of capital of Ex Limited using both the weights.

Capital Structure

3. The following data relates to two companies belonging to the same risk class:

Particulars	Bee Ltd.	Cee Ltd.
12% Debt	₹ 27,00,000	-
Equity Capitalization Rate	-	18
Expected Net Operating Income	₹ 9,00,000	₹ 9,00,000

You are required to:

- (a) DETERMINE the total market value, Equity capitalization rate and weighted average cost of capital for each company assuming no taxes as per M.M. Approach.
- (b) DETERMINE the total market value, Equity capitalization rate and weighted average cost of capital for each company assuming 40% taxes as per M.M. Approach.

Leverage

4. Company P and Q are having same earnings before tax. However, the margin of safety of Company P is 0.20 and, for Company Q, is 1.25 times than that of Company P. The interest expense of Company P is ₹ 1,50,000 and, for Company Q, is 1/3rd less than that of Company P. Further, the financial leverage of Company P is 4 and, for Company Q, is 75% of Company P.

Other information is given as below:

Particulars	Company P	Company Q
Profit volume ratio	25%	33.33%
Tax rate	45%	45%

You are required to PREPARE Income Statement for both the companies.

Investment Decisions

5. ABC & Co. is considering whether to replace an existing machine or to spend money on revamping it. ABC & Co. currently pays no taxes. The replacement machine costs ₹ 18,00,000 now and requires maintenance of ₹ 2,00,000 at the end of every year for eight years. At the end of eight years, it would have a salvage value of ₹ 4,00,000 and would be sold. The existing machine requires increasing amounts of maintenance each year and its salvage value fall each year as follows:

Year	Maintenance (₹)	Salvage (₹)
Present	0	8,00,000
1	2,00,000	5,00,000
2	4,00,000	3,00,000
3	6,00,000	2,00,000
4	8,00,000	0

The opportunity cost of capital for ABC & Co. is 15%.

REQUIRED:

When should the company replace the machine?

The following present value table is given for you:

Year	Present value of ₹ 1 at 15% discount rate
1	0.8696
2	0.7561
3	0.6575
4	0.5718
5	0.4972
6	0.4323
7	0.3759
8	0.3269

Risk Analysis in Capital Budgeting

6. ASG Ltd. is considering a project “Z” with an initial outlay of ₹ 15,00,000 and life of 5 years. The estimates of project are as follows:

	Lower Estimates	Base	Upper Estimates
Sales (units)	9,000	10,000	11,000
	(₹)	(₹)	(₹)
Selling Price p.u.	175	200	225

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Variable cost p.u.	100	125	150
Fixed Cost	1,00,000	1,50,000	2,00,000

Depreciation included in Fixed cost is ₹ 70,000 and corporate tax is 25%.

Assuming the cost of capital as 15%, DETERMINE NPV in three scenarios i.e worst, base and best case scenario.

PV factor for 5 years at 15% are as follows:

Years	1	2	3	4	5
P.V. factor	0.870	0.756	0.658	0.572	0.497

Dividend Decision

7. The following figures have been collected from the annual report of ABC Ltd. for the current financial year:

Net Profit	₹ 75 lakhs
Outstanding 12% preference shares	₹ 250 lakhs
No. of equity shares	7.50 lakhs
Return on Investment	20%
Cost of capital i.e. (K_e)	16%

- COMPUTE the approximate dividend pay-out ratio so as to keep the share price at ₹ 42 by using Walter's model?
- DETERMINE the optimum dividend pay-out ratio and the price of the share at such pay-out.
- PROVE that the dividend pay-out ratio as determined above in (b) is optimum by using random pay-out ratio.

Management of Cash

8. You are given below the Profit & Loss Accounts for two years for a company:

Profit and Loss Account

	Year 1	Year 2		Year 1	Year 2
	(₹)	(₹)		(₹)	(₹)
To Opening stock	32,00,000	40,00,000	By Sales	3,20,00,000	4,00,00,000
To Raw materials	1,20,00,000	1,60,00,000	By Closing stock	40,00,000	60,00,000
To Stores	38,40,000	48,00,000	By Misc. Income	4,00,000	4,00,000
To Manufacturing Expenses	51,20,000	64,00,000			

To Other Expenses	40,00,000	40,00,000			
To Depreciation	40,00,000	40,00,000			
To Net Profit	42,40,000	72,00,000		-	-
	3,64,00,000	4,64,00,000		3,64,00,000	4,64,00,000

Sales are expected to be ₹ 4,80,00,000 in year 3.

As a result, other expenses will increase by ₹ 20,00,000 besides other charges. Only raw materials are in stock. Assume sales and purchases are in cash terms and the closing stock is expected to go up by the same amount as between year 1 and 2. You may assume that no dividend is being paid. The Company can use 75% of the cash generated to service a loan. COMPUTE how much cash from operations will be available in year 3 for the purpose? Ignore income tax.

Management of Working Capital

9. PQR Ltd., a company newly commencing business in the year 2021-22, provides the following projected Profit and Loss Account:

	(₹)	(₹)
Sales		5,04,000
Cost of goods sold		<u>3,67,200</u>
Gross Profit		1,36,800
Administrative Expenses	33,600	
Selling Expenses	<u>31,200</u>	<u>64,800</u>
Profit before tax		72,000
Provision for taxation		<u>24,000</u>
Profit after tax		<u>48,000</u>
The cost of goods sold has been arrived at as under:		
Materials used	2,01,600	
Wages and manufacturing Expenses	1,50,000	
Depreciation	<u>56,400</u>	
	4,08,000	
Less: Stock of Finished goods (10% of goods produced not yet sold)	<u>40,800</u>	
	<u>3,67,200</u>	

The figure given above relate only to finished goods and not to work-in-progress. Goods equal to 15% of the year's production (in terms of physical units) will be in process on the

average requiring full materials but only 40% of the other expenses. The company believes in keeping materials equal to two months' consumption in stock.

All expenses will be paid one month in advance. Suppliers of materials will extend 1-1/2 months credit. Sales will be 20% for cash and the rest at two months' credit. 70% of the Income tax will be paid in advance in quarterly instalments. The company wishes to keep ₹ 19,200 in cash. 10% must be added to the estimated figure for unforeseen contingencies.

PREPARE an estimate of working capital.

Miscellaneous

10. (a) 'Profit maximisation is not the sole objective of a company. It is at best a limited objective. If profit is given undue importance, a number of problems can arise.' DISCUSS four of such problems.
- (b) DISCUSS Agency problem and its cost. HOW it arises and HOW it can be addressed?

SUGGESTED ANSWERS/HINTS

1. (i) **Determination of Sales and Cost of goods sold:**

$$\text{Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Sales}} \times 100$$

$$\text{Or, } \frac{25}{100} = \frac{\text{₹ } 12,00,000}{\text{Sales}}$$

$$\text{Or, Sales} = \frac{12,00,00,000}{25} = \text{₹ } 48,00,000$$

$$\begin{aligned} \text{Cost of Goods Sold} &= \text{Sales} - \text{Gross Profit} \\ &= \text{₹ } 48,00,000 - \text{₹ } 12,00,000 = \text{₹ } 36,00,000 \end{aligned}$$

(ii) **Determination of Sundry Debtors:**

Debtors' velocity is 3 months or Debtors' collection period is 3 months,

$$\text{So, Debtors' turnover ratio} = \frac{12 \text{ months}}{3 \text{ months}} = 4$$

$$\begin{aligned} \text{Debtors' turnover ratio} &= \frac{\text{Credit Sales}}{\text{Average Accounts Receivable}} \\ &= \frac{\text{₹ } 48,00,000}{\text{Bills Receivable} + \text{Sundry Debtors}} = 4 \end{aligned}$$

$$\text{Or, Sundry Debtors} + \text{Bills receivable} = \text{₹ } 12,00,000$$

$$\text{Sundry Debtors} = ₹ 12,00,000 - ₹ 75,000 = ₹ 11,25,000$$

(iii) Determination of Closing Stock

$$\text{Stock Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Stock}} = \frac{₹ 36,00,000}{\text{Average Stock}} = 1.5$$

$$\text{So, Average Stock} = ₹ 24,00,000$$

$$\text{Now Average Stock} = \frac{\text{Opening Stock} + \text{Closing Stock}}{2}$$

$$\text{Or } \frac{\text{Opening Stock} + (\text{Opening Stock} + ₹ 30,000)}{2} = ₹ 24,00,000$$

$$\text{Or } 2 \text{ Opening Stock} + ₹ 30,000 = ₹ 48,00,000$$

$$\text{Or } 2 \text{ Opening Stock} = ₹ 47,70,000$$

$$\text{Or, Opening Stock} = ₹ 23,85,000$$

$$\text{So, Closing Stock} = ₹ 23,85,000 + ₹ 30,000 = ₹ 24,15,000$$

(iv) Determination of Sundry Creditors:

Creditors' velocity of 2 months or credit payment period is 2 months.

$$\text{So, Creditors' turnover ratio} = \frac{12 \text{ months}}{2 \text{ months}} = 6$$

$$\text{Creditors turnover ratio} = \frac{\text{Credit Purchases}^*}{\text{Average Accounts Payables}}$$

$$= \frac{₹ 36,30,000}{\text{Sundry Creditors} + \text{Bills Payables}} = 6$$

$$\text{So, Sundry Creditors} + \text{Bills Payable} = ₹ 6,05,000$$

$$\text{Or, Sundry Creditors} + ₹ 30,000 = ₹ 6,05,000$$

$$\text{Or, Sundry Creditors} = ₹ 5,75,000$$

(v) Determination of Fixed Assets

$$\text{Fixed Assets Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Fixed Assets}} = 4$$

$$\text{Or, } \frac{₹ 36,00,000}{\text{Fixed Assets}} = 4$$

$$\text{Or, Fixed Asset} = ₹ 9,00,000$$

Workings:

***Calculation of Credit purchases:**

Cost of goods sold = Opening stock + Purchases – Closing stock

$$₹ 36,00,000 = ₹ 23,85,000 + \text{Purchases} - ₹ 24,15,000$$

$$\text{Purchases (credit)} = ₹ 36,30,000$$

Calculation of credit purchase also can be done as below:

Or Credit Purchases = Cost of goods sold + Difference in Opening Stock

$$\text{Or Credit Purchases} = ₹ 36,00,000 + ₹ 30,000 = ₹ 36,30,000$$

$$2. \quad (i) \quad \text{Cost of Equity (K}_e) = \frac{D_1}{P_0 - F} + g = \frac{₹ 17.716}{₹ 125 - ₹ 5} + 0.10^*$$

$$K_e = 0.2476$$

*Calculation of g:

$$₹ 10 (1+g)^5 = ₹ 16.105$$

$$\text{Or, } (1+g)^5 = \frac{16.105}{10} = 1.6105$$

Table (FVIF) suggests that ₹ 1 compounds to ₹ 1.6105 in 5 years at the compound rate of 10 percent. Therefore, g is 10 per cent.

$$(ii) \quad \text{Cost of Retained Earnings (K}_r) = \frac{D_1}{P_0} + g = \frac{₹ 17.716}{₹ 130} + 0.10 = 0.2363$$

$$(iii) \quad \text{Cost of Preference Shares (K}_p) = \frac{PD}{P_0} = \frac{₹ 15}{₹ 105} = 0.1429$$

$$(iv) \quad \text{Cost of Debentures (K}_d) = \frac{I(1-t) + \left(\frac{RV - NP}{n} \right)}{\frac{RV + NP}{2}}$$

$$= \frac{₹ 15 (1-0.30) + \left(\frac{₹ 100 - ₹ 91.75^*}{11 \text{ years}} \right)}{\frac{₹ 100 + ₹ 91.75^*}{2}}$$

$$= \frac{₹ 15 \times 0.70 + ₹ 0.75}{₹ 95.875} = \frac{₹ 11.25}{₹ 95.875} = 0.1173$$

*Since yield on similar type of debentures is 16 per cent, the company would be required to offer debentures at discount.

Market price of debentures (approximation method)

$$= ₹ 15 \div 0.16 = ₹ 93.75$$

Sale proceeds from debentures = ₹ 93.75 – ₹ 2 (i.e., flotation cost) = ₹ 91.75

Market value (P_0) of debentures can also be found out using the present value method:

$$P_0 = \text{Annual Interest} \times \text{PVIFA (16\%, 11 years)} + \text{Redemption value} \times \text{PVIF (16\%, 11 years)}$$

$$P_0 = ₹ 15 \times 5.0287 + ₹ 100 \times 0.1954$$

$$P_0 = ₹ 75.4305 + ₹ 19.54 = ₹ 94.9705$$

$$\text{Net Proceeds} = ₹ 94.9705 - 2\% \text{ of } ₹ 100 = ₹ 92.9705$$

Accordingly, the cost of debt can be calculated

Total Cost of capital [BV weights and MV weights]

(Amount in (₹) lakh)

Source of capital	Weights		Specific Cost (K)	Total cost	
	BV	MV		(BV × K)	(MV × K)
Equity Shares	240	320**	0.2476	59.4240	79.2320
Retained Earnings	60	80**	0.2363	14.1780	18.9040
Preference Shares	72	67.50	0.1429	10.2888	9.6458
Debentures	18	20.80	0.1173	2.1114	2.4398
Total	390	488.30		86.0022	110.2216

**Market Value of equity has been apportioned in the ratio of Book Value of equity and retained earnings i.e., 240:60 or 4:1.

Weighted Average Cost of Capital (WACC):

$$\text{Using Book Value} = \frac{₹ 86.0022}{₹ 390} = 0.2205 \text{ or } 22.05\%$$

$$\text{Using Market Value} = \frac{₹ 110.2216}{₹ 488.30} = 0.2257 \text{ or } 22.57\%$$

3. (a) Assuming no tax as per MM Approach.

Calculation of Value of Firms 'Bee Ltd.' and 'Cee Ltd' according to MM Hypothesis

Market Value of 'Cee Ltd' [Unlevered(u)]

Total Value of Unlevered Firm (V_u) = $[NOI/k_e] = 9,00,000/0.18 = ₹ 50,00,000$

K_e of Unlevered Firm (given) = 0.18

K_o of Unlevered Firm (Same as above = k_e as there is no debt) = 0.18

Market Value of 'Bee Ltd' [Levered Firm (l)]

Total Value of Levered Firm (V_L) = $V_u + (Debt \times Nil)$
 = ₹ 50,00,000 + (27,00,000 × nil)
 = ₹ 50,00,000

Computation of Equity Capitalization Rate and Weighted Average Cost of Capital (WACC)

Particulars	Bee Ltd.
Net Operating Income (NOI)	9,00,000
Less: Interest on Debt (I)	3,24,000
Earnings of Equity Shareholders (NI)	5,76,000
Overall Capitalization Rate (k_o)	0.18
Total Value of Firm ($V = NOI/k_o$)	50,00,000
Less: Market Value of Debt	27,00,000
Market Value of Equity (S)	23,00,000
Equity Capitalization Rate [$k_e = NI / S$]	0.2504
Weighted Average Cost of Capital (k_o)* $k_o = (k_e \times S/V) + (k_d \times D/V)$	0.18

*Computation of WACC Bee Ltd

Component of Capital	Amount	Weight	Cost of Capital	WACC
Equity	23,00,000	0.46	0.2504	0.1152
Debt	27,00,000	0.54	0.12*	0.0648
Total	50,00,000			0.18

* $K_d = 12\%$ (since there is no tax)

WACC = 18%

(b) Assuming 40% taxes as per MM Approach

Calculation of Value of Firms ‘Bee Ltd.’ and ‘Cee Ltd’ according to MM Hypothesis

Market Value of ‘Cee Ltd’ [Unlevered(u)]

$$\begin{aligned} \text{Total Value of unlevered Firm (V}_u) &= [\text{NOI (1 - t)/}k_e] = 9,00,000 (1 - 0.40) / 0.18 \\ &= ₹ 30,00,000 \end{aligned}$$

K_e of unlevered Firm (given) = 0.18

K_o of unlevered Firm (Same as above = k_e as there is no debt) = 0.18

Market Value of ‘Bee Ltd’ [Levered Firm (l)]

$$\begin{aligned} \text{Total Value of Levered Firm (V}_L) &= V_u + (\text{Debt} \times \text{Tax}) \\ &= ₹ 30,00,000 + (27,00,000 \times 0.4) \\ &= ₹ 40,80,000 \end{aligned}$$

Computation of Weighted Average Cost of Capital (WACC) of ‘Cee Ltd.’

= 18% (i.e. $K_e = K_o$)

**Computation of Equity Capitalization Rate and
Weighted Average Cost of Capital (WACC) of Bee Ltd**

Particulars	Bee Ltd. (₹)
Net Operating Income (NOI)	9,00,000
Less: Interest on Debt (I)	3,24,000
Earnings Before Tax (EBT)	5,76,000
Less: Tax @ 40%	2,30,400
Earnings for equity shareholders (NI)	3,45,600
Total Value of Firm (V) as calculated above	40,80,000
Less: Market Value of Debt	27,00,000
Market Value of Equity (S)	13,80,000
Equity Capitalization Rate [$k_e = \text{NI/S}$]	0.2504
Weighted Average Cost of Capital (k_o)* $k_o = (k_e \times S/V) + (k_d \times D/V)$	13.23

*Computation of WACC Bee Ltd.

Component of Capital	Amount	Weight	Cost of Capital	WACC
Equity	13,80,000	0.338	0.2504	0.0846

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Debt	27,00,000	0.662	0.072*	0.0477
Total	40,80,000			0.1323

$$*K_d = 12\% (1 - 0.4) = 12\% \times 0.6 = 7.2\%$$

$$WACC = 13.23\%$$

4.

Income Statement

Particulars	Company P (₹)	Company Q (₹)
Sales	40,00,000	18,00,000
Less: Variable Cost	30,00,000	12,00,000
Contribution	10,00,000	6,00,000
Less: Fixed Cost	8,00,000	4,50,000
EBIT	2,00,000	1,50,000
Less: Interest	1,50,000	1,00,000
EBT	50,000	50,000
Tax (45%)	22,500	22,500
EAT	27,500	27,500

Workings:

(i) Margin of Safety

$$\text{For Company P} = 0.20$$

$$\text{For Company Q} = 0.20 \times 1.25 = 0.25$$

(ii) Interest Expenses

$$\text{For Company P} = ₹ 1,50,000$$

$$\text{For Company Q} = ₹ 1,50,000 (1 - 1/3) = ₹ 1,00,000$$

(iii) Financial Leverage

$$\text{For Company P} = 4$$

$$\text{For Company Q} = 4 \times 75\% = 3$$

(iv) EBIT

For Company A

$$\text{Financial Leverage} = \text{EBIT} / (\text{EBIT} - \text{Interest})$$

$$4 = \text{EBIT} / (\text{EBIT} - ₹ 1,50,000)$$

$$4\text{EBIT} - ₹ 6,00,000 = \text{EBIT}$$

$$3\text{EBIT} = ₹ 6,00,000$$

EBIT = ₹ 2,00,000

For Company B

Financial Leverage = EBIT/(EBIT - Interest)

3 = EBIT/(EBIT – ₹ 1,00,000)

3EBIT – ₹ 3,00,000 = EBIT

2EBIT = ₹ 3,00,000

EBIT = ₹ 1,50,000

(v) Contribution

For Company A

Operating Leverage = 1/Margin of Safety

= 1/0.20 = 5

Operating Leverage = Contribution/EBIT

5 = Contribution/₹ 2,00,000

Contribution = ₹ 10,00,000

For Company B

Operating Leverage = 1/Margin of Safety

= 1/0.25 = 4

Operating Leverage = Contribution/EBIT

4 = Contribution/₹ 1,50,000

Contribution = ₹ 6,00,000

(vi) Sales

For Company A

Profit Volume Ratio = 25%

Profit Volume Ratio = Contribution/Sales × 100

25% = ₹ 10,00,000/Sales

Sales = ₹ 10,00,000/25%

Sales = ₹ 40,00,000

For Company B

Profit Volume Ratio = 33.33%

Therefore, Sales = ₹ 6,00,000/33.33%

Sales = ₹ 18,00,000

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5.

ABC & Co.

Equivalent Annual Cost (EAC) of new machine

		(₹)
(i)	Cost of new machine now	18,00,000
	Add: PV of annual repairs @ ₹ 2,00,000 per annum for 8 years (₹ 2,00,000 × 4.4873)	8,97,460
		26,97,460
	Less: PV of salvage value at the end of 8 years (₹ 4,00,000 × 0.3269)	1,30,760
		25,66,700
	Equivalent annual cost (EAC) (₹ 25,66,700/4.4873)	5,71,992

**PV of cost of replacing the old machine in each of 4 years
with new machine**

Scenario	Year	Cash Flow	PV @ 15%	PV
		(₹)		(₹)
Replace Immediately	0	(5,71,992)	1.00	(5,71,992)
	0	8,00,000	1.00	8,00,000
				2,28,008
Replace in one year	1	(5,71,992)	0.8696	(4,97,404)
	1	(2,00,000)	0.8696	(1,73,920)
	1	5,00,000	0.8696	4,34,800
				(2,36,524)
Replace in two years	1	(2,00,000)	0.8696	(1,73,920)
	2	(5,71,992)	0.7561	(4,32,483)
	2	(4,00,000)	0.7561	(3,02,440)
	2	3,00,000	0.7561	2,26,830
				(6,82,013)
Replace in three years	1	(2,00,000)	0.8696	(1,73,920)
	2	(4,00,000)	0.7561	(3,02,440)
	3	(5,71,992)	0.6575	(3,76,085)
	3	(6,00,000)	0.6575	(3,94,500)
	3	2,00,000	0.6575	1,31,500
				(11,15,445)

Replace in four years	1	(2,00,000)	0.8696	(1,73,920)
	2	(4,00,000)	0.7561	(3,02,440)
	3	(6,00,000)	0.6575	(3,94,500)
	4	(5,71,992)	0.5718	(3,27,065)
	4	(8,00,000)	0.5718	(4,57,440)

Advice: The company should replace the old machine immediately because the PV of cost of replacing the old machine with new machine is least.

6. (i) **Calculation of Yearly Cash Inflow**

In worst case: High costs and Low price (Selling price) and volume (Sales units) are taken.

In best case: Low costs and High price (Selling price) and volume (Sales units) are taken.

	Worst Case	Base	Best Case
Sales (units) (A)	9,000	10,000	11,000
	(₹)	(₹)	(₹)
Selling Price p.u.	175	200	225
Less: Variable cost p.u.	150	125	100
Contribution p.u. (B)	25	75	125
Total Contribution (A x B)	2,25,000	7,50,000	13,75,000
Less: Fixed Cost	2,00,000	1,50,000	1,00,000
EBT	25,000	6,00,000	12,75,000
Less: Tax @ 25%	62,50	1,50,000	3,18,750
EAT	18,750	4,50,000	9,56,250
Add: Depreciation	70,000	70,000	70,000
Cash Inflow	88,750	5,20,000	10,26,250

(ii) **Calculation of NPV in different scenarios**

	Worst Case	Base	Best Case
Initial outlay (A) (₹)	15,00,000	15,00,000	15,00,000
Cash Inflow (c) (₹)	88,750	5,20,000	10,26,250
Cumulative PVF @ 15% for 5 years (d)	3.353	3.353	3.353

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INTERMEDIATE EXAMINATION: MAY, 2022

PV of Cash Inflow (B = c x d) (₹)	2,97,578.75	17,43,560.00	34,41,016.25
NPV (B - A) (₹)	(12,02,421.25)	2,43,560.00	19,41,016.25

7. (a)

	₹ in lakhs
Net Profit	75
Less: Preference dividend	30
Earning for equity shareholders	45
Earning per share	= 45/7.5 = ₹ 6.00

Let, the dividend per share be D to get share price of ₹ 42

$$P = \frac{D + \frac{r}{K_e}(E - D)}{K_e}$$

$$₹ 42 = \frac{D + \frac{0.20}{0.16}(6 - D)}{0.16}$$

$$6.72 = \frac{0.16D + 1.2 - 0.20D}{0.16}$$

$$0.04D = 1.2 - 1.0752$$

$$D = 3.12$$

$$D/P \text{ ratio} = \frac{DPS}{EPS} \times 100 = \frac{3.12}{6} \times 100 = 52\%$$

So, the required dividend payout ratio will be = 52%

(b) Since $r > K_e$, the optimum dividend pay-out ratio would 'Zero' (i.e. $D = 0$), Accordingly, value of a share:

$$P = \frac{D + \frac{r}{K_e}(E - D)}{K_e}$$

$$P = \frac{0 + \frac{0.20}{0.16}(6 - 0)}{0.16} = ₹ 46.875$$

- (c) The optimality of the above pay-out ratio can be proved by using 25%, 50%, 75% and 100% as pay- out ratio:

At 25% pay-out ratio

$$P = \frac{1.5 + \frac{0.20}{0.16}(6-1.5)}{0.16} = ₹ 44.531$$

At 50% pay-out ratio

$$P = \frac{3 + \frac{0.20}{0.16}(6-3)}{0.16} = ₹ 42.188$$

At 75% pay-out ratio

$$P = \frac{4.5 + \frac{0.20}{0.16}(6-4.5)}{0.16} = ₹ 39.844$$

At 100% pay-out ratio

$$P = \frac{6 + \frac{0.20}{0.16}(6-6)}{0.16} = ₹ 37.50$$

From the above it can be seen that price of share is maximum when dividend pay-out ratio is 'zero' as determined in (b) above.

8. Projected Profit and Loss Account for the year 3

Particulars	Year 2 Actual (₹ in lakhs)	Year 3 Projected (₹ in lakhs)	Particulars	Year 2 Actual (₹ in lakhs)	Year 3 Projected (₹ in lakhs)
To Materials consumed	140.00	168.00	By Sales	400.00	480.00
To Stores	48.00	57.60	By Misc. Income	4.00	4.00
To Mfg. Expenses	64.00	76.80			
To Other expenses	40.00	60.00			
To Depreciation	40.00	40.00			
To Net profit	72.00	81.60			
	404.00	484.00		484.00	484.00

Cash Flow:

Particulars	(₹ in lakhs)
Profit	81.60
Add: Depreciation	<u>40.00</u>
	121.60

Less: Cash required for increase in stock	<u>20.00</u>
Net cash inflow	101.60

Available for servicing the loan: 75% of ₹ 1,01,60,000 or ₹ 76,20,000

Working Notes:

- (i) Material consumed in year 1 = $(32 + 120 - 40)/320 = 35\%$
 Material consumed in year 2 = $(40 + 160 - 60)/400 = 35\%$
 Likely consumption in year 3 = $480 \times \frac{35}{100} = ₹ 168$ (lakhs)
- (ii) Stores are 12% of sales & Manufacturing expenses are 16% of sales for both the years.

9. Statement showing the requirements of Working Capital

Particulars	(₹)	(₹)
A. Current Assets:		
Inventory:		
Stock of Raw material (₹ 2,31,840 × 2/12)	38,640	
Stock of Work-in-progress (As per Working Note)	39,240	
Stock of Finished goods (₹ 3,51,600 × 10/100)	35,160	
Receivables (Debtors) (₹3,04,992 × 2/12)	50,832	
Cash in Hand	19,200	
Prepaid Expenses:		
Wages & Mfg. Expenses (₹ 1,59,000 × 1/12)	13,250	
Administrative expenses (₹ 33,600 × 1/12)	2,800	
Selling & Distribution Expenses (₹ 31,200 × 1/12)	2,600	
Advance taxes paid {(70% of ₹ 24,000) × 3/12}	4,200	
Gross Working Capital	2,05,922	2,05,922
B. Current Liabilities:		
Payables for Raw materials (₹ 2,70,480 × 1.5/12)	33,810	
Provision for Taxation (Net of Advance Tax) (₹ 24,000 × 30/100)	7,200	
Total Current Liabilities	41,010	41,010
C. Excess of CA over CL		1,64,912
Add: 10% for unforeseen contingencies		16,491
Net Working Capital requirements		1,81,403

Working Notes:

(i) Calculation of Stock of Work-in-progress

Particulars	(₹)
Raw Material (₹ 2,01,600 × 15%)	30,240
Wages & Mfg. Expenses (₹ 1,50,000 × 15% × 40%)	9,000
Total	39,240

(ii) Calculation of Stock of Finished Goods and Cost of Sales

Particulars	(₹)
Direct material Cost [₹ 2,01,600 + ₹ 30,240]	2,31,840
Wages & Mfg. Expenses [₹ 1,50,000 + ₹ 9,000]	1,59,000
Depreciation	0
Gross Factory Cost	3,90,840
<i>Less:</i> Closing W.I.P.	(39,240)
Cost of goods produced	3,51,600
<i>Add:</i> Administrative Expenses	33,600
	3,85,200
<i>Less:</i> Closing stock	(35,160)
Cost of Goods Sold	3,50,040
<i>Add:</i> Selling and Distribution Expenses	31,200
Total Cash Cost of Sales	3,81,240
Debtors (80% of cash cost of sales)	3,04,992

(iii) Calculation of Credit Purchase

Particulars	(₹)
Raw material consumed	2,31,840
<i>Add:</i> Closing Stock	38,640
<i>Less:</i> Opening Stock	-
Purchases	2,70,480

10. (a) **Profit maximisation cannot be the sole objective of a company.** It is at best a limited objective. If profit is given undue importance, a number of problems can arise. Some of these have been discussed below:

(i) **The term profit is vague. It does not clarify what exactly it means.** It conveys a different meaning to different people. For example, profit may be in short term or long term period; it may be total profit or rate of profit etc.

(ii) **Profit maximisation has to be attempted with a realisation of risks involved.** There is a direct relationship between risk and profit. Many risky propositions yield high profit. Higher the risk, higher is the possibility of profits. If profit maximisation is the only goal, then risk factor is altogether ignored. This implies that finance manager will accept highly risky proposals also, if they give high profits. In practice, however, risk is very important consideration and has to be balanced with the profit objective.

(iii) **Profit maximisation as an objective does not take into account the time pattern of returns.** Proposal A may give a higher amount of profits as compared to proposal B, yet if the returns of proposal A begin to flow say 10 years later, proposal B may be preferred which may have lower overall profit but the returns flow is more early and quick.

(iv) **Profit maximisation as an objective is too narrow.** It fails to take into account the social considerations as also the obligations to various interests of workers, consumers, society, as well as ethical trade practices. If these factors are ignored, a company cannot survive for long. Profit maximization at the cost of social and moral obligations is a short sighted policy.

(b) **Agency Problem:** Though in a sole proprietorship firm, partnership etc., owners participate in management but in corporates, owners are not active in management so, there is a separation between owner/ shareholders and managers. In theory managers should act in the best interest of shareholders however in reality, managers may try to maximise their individual goal like salary, perks etc., so there is a principal agent relationship between managers and owners, which is known as Agency Problem. In a nutshell, **Agency Problem is the chances that managers may place personal goals ahead of the goal of owners.**

Agency Problem leads to Agency Cost. Agency cost is the additional cost borne by the shareholders to monitor the manager and control their behaviour so as to maximise shareholders wealth. Generally, Agency Costs are of four types (i) monitoring (ii) bonding (iii) opportunity (iv) structuring.

The agency problem arises if manager's interests are not aligned to the interests of the debt lender and equity investors. The agency problem of debt lender would be addressed by imposing negative covenants i.e. the managers cannot borrow beyond a point. This is one of the most important concepts of modern-day

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finance and the application of this would be applied in the Credit Risk Management of Bank, Fund Raising, Valuing distressed companies.

Agency problem between the managers and shareholders can be addressed if the interests of the managers are aligned to the interests of the shareholders. It is easier said than done.

However, following **efforts** have been made to **address these issues**:

- ◆ Managerial compensation is linked to profit of the company to some extent and also with the long-term objectives of the company.
- ◆ Employee is also designed to address the issue with the underlying assumption that maximisation of the stock price is the objective of the investors.
- ◆ Effecting monitoring can be done.

SECTION: B: ECONOMICS FOR FINANCE

QUESTIONS

1. (a) What are the data requirement and outcome of different method of National Income Calculation?
- (b) Can the GDP of a country be taken as an Index of welfare of people in the country?
- (c) Calculate National Income with the help of Expenditure Method and Income Method:

Item	In Crores
Compensation of employees	1600
Profit	700
Net factor Income from above abroad	40
Indirect Taxes	200
Subsidies	80
Private Final Consumption Expenditure	1800
Net domestic capital formation	900
Depreciation	150
Interest	600
Rent	400
Mixed Income of self employed	800
Export	50
Import	30
Government Final consumption expenditure	1100
Employees contribution to social security scheme	400

2. (a) How is multiplier useful in of functioning of Keynesian theory of determination of National Income?
- (b) Do you agree with the statement "An important element of Keynesian models is that they relate to short period equilibrium and contain no dynamic elements?"
- (c) An Economy is characterized by the following equations:
 $C = 40 + 0.6Y_d$
 $F = 20$
 $G = 40$
 $T_Y = 2$

$$X = 30$$

$$M = 25 + 0.02Y$$

- (a) What is the equilibrium income.
 - (b) Calculate trade balance and foreign trade multiplier.
3. (a) What are the various instruments by which governments can influence resource allocation in the economy?
- (b) What are the intervention by government for correcting information failure?
 - (c) What is the distinction between discretionary and non-discretionary fiscal policy?
 - (d) What is the interrelationship between monetary policy and Money Supply?
4. (a) How is credit multiplier determined?
- (b) What is Compound tariff and how it is different from Mixed Tariff?
 - (c) What is Voluntary Export Restraints?
 - (d) Explain the situation “where a pharmaceutical Company has full information regarding the risks of a product, but it continues to sell”?
5. (a) What are the major concern in functioning of WTO?
- (b) How does income leakages effect the multiplier?
 - (c) Which is the most appropriate method for calculation of National Income in developed countries?
 - (d) What is the significance of Liquidity Preference of behavior towards risk?

SUGGESTED ANSWERS

1. (a) The processes of production, distribution and disposition keep going on simultaneously and enable us to look at national income from three different angles namely: as a flow of production or value added, as a flow of income and as a flow of expenditure. Each of these different ways of looking at national income suggests a different method of calculation and requires a different set of data.

Product Method

Data required: The sum of net values added by all the producing enterprises of the country.

What is measured: Contribution of production units.

Income Method

Data required: Total factor incomes generated in the production of goods and services

What is measured: Relative contribution of factor owners.

Expenditure method

Data required: Sum of expenditures of the three spending units in the economy, namely, government, consumer households, and producing enterprises.

What is measured: Flow of consumption and investment expenditures

- (b) There are many reasons to dispute the validity of GDP as a perfect measure of well-being. In fact, GDP measures our ability to obtain many requirements to make our life better; yet leave out many important aspects which ensure good quality of life for all. GDP measures exclude the following which are critical for the overall wellbeing of citizens.
- Countries may have significantly different income distributions and, consequently, different levels of overall well-being for the same level of per capita income.
 - Quality improvements in systems and processes due to technological as well as managerial innovations which reflect true growth in output from year to year.
 - Productions hidden from government authorities, either because those engaged in it are evading taxes or because it is illegal.
 - Nonmarket production (with a few exceptions) and non-economic contributors to well-being for example: health of a country's citizens, education levels, political participation, or other social and political factors that may significantly affect well-being levels.
 - The disutility of loss of leisure time. We know that other things remaining the same, a country's GDP rises if the total hours of work increase.
 - The volunteer work and services rendered without remuneration undertaken in the economy, even though such work can contribute to social well-being as much as paid work.
 - Many things that contribute to our economic welfare such as, leisure time, fairness, gender equality, security of community feeling etc.,
 - Both positive and negative externalities which are external effects that do not form part of market transactions.

(c) Income Method

$$\begin{aligned} \text{NNP}_{\text{FC or NI}} &= \text{Compensation of Employees} + \text{Operating Surplus} + \text{Mixed} \\ &\quad \text{Income of self employed} + \text{Net factor Income from abroad.} \\ &= 1600 + (\text{Rent} + \text{Interest} + \text{Profit}) + \text{Mixed Income of self-} \\ &\quad \text{employed} + \text{Net factor Income from Abroad.} \\ &= 1600 + (400+600+700) + 800+40 \\ &= 1600+1700+840 \\ &= 4140 \text{ Cr.} \end{aligned}$$

$$\begin{aligned} \text{GDP}_{\text{MP}} &= \text{Private final consumption expenditure} + \text{Government final} \\ &\quad \text{Consumption expenditure} + \text{Gross domestic Capital formation} \\ &\quad (\text{Net domestic Capital formation} + \text{depreciation}) + \text{Net export} \\ &= 1800+1100 (900 + 150) + (50 - 30) \\ &= 2900 + 1050+20 \\ &= 3970 \text{ Cr.} \end{aligned}$$

$$\begin{aligned} \text{NNP}_{\text{FC or NI}} &= \text{GDP}_{\text{MP}} - \text{depreciation} + \text{Net factor income from abroad} - \text{Net} \\ &\quad \text{Indirect taxes} \\ &= 3970 - 150 + 40 - 120 \\ &= 3740 \text{ Cr.} \end{aligned}$$

2. (a) The multiplier concept is central to Keynes's theory because it explains how shifts in investment caused by changes in business expectations set off a process that causes not only investment but also consumption to vary. The multiplier shows how shocks to one sector are transmitted throughout the economy.

The MPC, on which the multiplier effect of increase in income depends, is high in underdeveloped countries, but ironically the value of multiplier is low. Due to structural inadequacies, increase in consumption expenditure is not generally accompanied by increase in production. Example, increased demand for industrial goods consequent on increased income does not lead to increase in their real output, rather prices tend to rise.

- (b) An important element of Keynesian models is that they relate to short-period equilibrium and contain no dynamic elements. There is nothing like Keynesian macro-economic dynamics. When a shock occurs, for example when there is a change in autonomous investment due to change in some variable, one equilibrium position can be compared with another as a matter of comparative statics. There is no link between one period and the next and no provision is made for an analysis of processes through time.

$$\begin{aligned} \text{(c) } Y &= C + I + G + (X - M) \\ &= 40 + 0.6Y_d + 20 + 40 + (30 - 25 + 0.02Y) \\ &= 40 + 0.6(Y - T) + 20 + 40 + 30 - 25 - 0.02Y \\ &= 40 + 0.6(Y - 2) + 65 - 0.02Y \\ &= 40 + 0.6Y - 1.2 + 65 = 0.02Y \end{aligned}$$

$$Y = 103.8 + 0.58Y$$

$$Y - 0.58Y = 103.8$$

$$0.42Y = 103.8$$

$$Y = \frac{103.8}{0.42} = 247.142$$

$$\begin{aligned} \text{Trade Balance} &= (X - M) \\ &= 30 - 25 + 0.02(247.142) \\ &= 5 + 4.94 \\ &= 9.94 \text{ Cr.} \end{aligned}$$

$$\begin{aligned} \text{Foreign Trade multiplier} &= \frac{1}{1 - b + m} \\ &= \frac{1}{1 - 0.6 + 0.02} \\ &= \frac{1}{0.42} \\ &= 2.38 \end{aligned}$$

3. (a) The allocation responsibility of the governments involves suitable corrective action when private market fail to provide the right and desirable combination of goods and services. A variety of allocation instruments are available by which governments can influence resource allocation in the economy. For example,
- Government may directly produce an economic good.
 - Government may influence private allocation through incentives and disincentives.
 - Government may influence allocation through its competition policies, merger policies etc. which affect the structure of industry and commerce.
 - Governments' regulatory activities such as licensing, controls, minimum wages, and directives on location of industry influence resource allocation.

- Government sets legal and administrative frameworks, and
 - Any mixture of intermediate methods may be adopted by governments.
- (b) For combating the problem of market failure due to information problems and considering the importance of information in making rational choices, the following interventions are resorted to:
- Government makes it mandatory to have accurate labelling and content disclosures by producers. Eg. Labelling of nutritional information in food packages.
 - Mandatory disclosure of information for example: SEBI requires that accurate information be provided to prospective buyers of new stocks.
 - Public dissemination of information to improve knowledge and subsidizing of initiatives in that direction.
 - Regulation of advertising and setting of advertising standards to make advertising more responsible, informative, and less persuasive.
- (c) Discretionary fiscal policy refers to deliberate policy actions on the part of the government to change the levels of expenditure and taxes to influence the level of national output, employment, and prices. Non-discretionary fiscal policy or automatic stabilizers are part of the structure of the economy and are 'built-in' fiscal mechanisms that operate automatically to reduce the expansions and contractions of the business cycle.

In most economies, changes in the level of taxation and level of government spending tend to occur automatically. These are dependent on and are determined by the level of aggregate production and income, such that the instability caused by business cycle is automatically dampened without any need for discretionary policy action.

- (d) If the central bank of a country wants to stimulate economic activity it does so by infusing liquidity into the system. Let us take the example of open market operations (OMO) by central banks. Purchase of government securities injects high powered money (monetary base) into the system. Assuming that banks do not hold excess reserves and people do not hold more currency than before, and also that there is demand for loans from businesses, the credit creation process by the banking system in the country will create money to the tune of

$$\Delta \text{Money Supply} = 1/R \times \Delta \text{Reserves}$$

The effect of an open market sale is very similar to that of open market purchase, but in the opposite direction. In other words, an open market purchase by central bank will reduce the reserves and thereby reduce the money supply.

4. (a) The Credit Multiplier also referred to as the deposit multiplier or the deposit expansion multiplier, describes the amount of additional money created by commercial bank through the process of lending the available money it has in excess of the central bank's reserve requirements. The deposit multiplier is, thus inextricably tied to the bank's reserve requirement. This measure tells us how much new money will be created by the banking system for a given increase in the high-powered money. It reflects a bank's ability to increase the money supply.

The existence of the credit multiplier is the outcome of fractional reserve banking. It explains how increase in money supply is caused by the commercial bank's use of depositors funds to lend money.

Credit Multiplier = $1 / \text{Required Reserve Ratio}$

- (b) Tariffs are aimed at altering the relative prices of goods and services imported, so as to contract the domestic demand and thus regulate the volume of their imports. Tariffs leave the world market price of the goods unaffected; while raising their prices in the domestic market. The main goals of tariffs are to raise revenue for the government, and more importantly to protect the domestic import-competing industries. The distinction between Compound tariff and Mixed tariff is as follows:

Compound Tariff or a Compound Duty is a combination of an ad valorem and a specific tariff. i.e., the tariff is calculated on the basis of both the value of the imported goods (an ad valorem duty) and a unit of measure of the imported goods (a specific duty). It is generally calculated by adding up a specific duty to an ad valorem duty.

Mixed Tariffs: Mixed tariffs are expressed either on the basis of the value of the imported goods (an ad valorem rate) or on the basis of a unit of measure of the imported goods (a specific duty) depending on which generates the most income (or least income at times) for the nation.

- (c) Voluntary Export Restraints (VERs) refer to a type of informal quota administered by an exporting country voluntarily restraining the quantity of goods that can be exported out of that country during a specified period of time. Such restraints originate primarily from political considerations and are imposed based on negotiations of the importer with the exporter.

The inducement for the exporter to agree to a VER is mostly to appease the importing country and to avoid the effects of possible retaliatory trade restraints that may be imposed by the importer. VERs may arise when the import-competing industries seek protection from a surge of imports from particular exporting countries. VERs cause, as do tariffs and quotas, domestic prices to rise and cause loss of domestic consumer surplus.

- (d) This is a case of Asymmetric Information. Asymmetric information occurs when there is an imbalance in information between buyer and seller i.e. when the buyer knows more than the seller or the seller knows more than the buyer. This can distort choices. With asymmetric information, low-quality goods can drive high-quality goods out of the market. These are situations in which one party to a transaction knows a material fact that the other party does not. This phenomenon, which is sometimes referred to as the 'lemons problem', is an important source of market failure. These are situations in which one party to a transaction knows a material fact that the other party does not. This phenomenon, which is sometimes referred to as the 'lemons problem', is an important source of market failure.
5. (a) In recent years, apprehensions have been raised in respect of the WTO and its ability to maintain and extend a system of liberal world trade. The major issues are:
- The progress of multilateral negotiations on trade liberalization is very slow and the requirement of consensus among all members acts as a constraint and creates rigidity in the system. As a result, countries find regionalism as a plausible alternative.
 - The complex network of regional agreements introduces uncertainties and murkiness in the global trade system.
 - While multilateral efforts have effectively reduced tariffs on industrial goods, the achievement in liberalizing trade in agriculture, textiles, and apparel, and in many other areas of international commerce has been negligible.
 - The negotiations, such as the Doha Development Round, have run into problems, and their definitive success is doubtful.
 - Specific to the developing countries, namely, protectionism and lack of willingness among developed countries to provide market access, difficulties that they face in implementing the present agreements, apparent north-south divide, exceptionally high tariffs, tariff escalation, erosion of preferences and difficulties with regards to adjustments.
- (b) The multiplier concept is central to Keynes's theory because it explains how shifts in investment caused by changes in business expectations set off a process that causes not only investment but also consumption to vary. The multiplier shows how shocks to one sector are transmitted throughout the economy.

Increase in income due to increase in initial investment, does not go on endlessly. The process of income propagation slows down and ultimately comes to a halt. Causes responsible for the decline in income are called leakages. Income that is not spent on currently produced consumption goods and services may be regarded as having leaked out of income stream. If the increased income goes out of the cycle

of consumption expenditure, there is a leakage from income stream which reduces the effect of multiplier. The more powerful these leakages are the smaller will be the value of multiplier

- (c) Ideally, all the three methods of national income computation should arrive at the same figure. Moreover, different ways of measuring total output give us different insights into the structure of our economy.

Income method may be most suitable for developed economies where people properly file their income tax returns. With the growing facility in the use of the commodity flow method of estimating expenditures, an increasing proportion of the national income is being estimated by expenditure method. As a matter of fact, countries like India are unable to estimate their national income wholly by one method. Thus, in agricultural sector, net value added is estimated by the production method, in small scale sector net value added is estimated by the income method and in the construction sector net value added is estimated by the expenditure method.

- (d) In his classic article, 'Liquidity Preference as Behavior towards Risk' (1958), Tobin established that the risk-avoiding behavior of individuals provided the foundation for the liquidity preference and for a negative relationship between the demand for money and the interest rate. The risk-aversion theory is based on the principles of portfolio management.

In his theory which analyzes the individual's portfolio allocation between money and bond holdings, the demand for money is considered as a store of wealth. Tobin hypothesized that an individual would hold a portion of his wealth in the form of money in the portfolio because the rate of return on holding money was more certain than the rate of return on holding interest earning assets and entails no capital gains or losses. It is riskier to hold alternative assets vis-à-vis holding just money alone, because government bonds and equities are subject to market price volatility, while money is not. Thus, bonds pay an expected return of r , but as asset, they are unlike money because they are risky; and their actual return is uncertain. Despite this, the individual will be willing to face this risk because the expected rate of return from the alternative financial assets exceeds that of money.