

PREPARATION STRATEGY FOR NOV2010 SFM/MAFA EXAM

There is no shortcut and the only way to generate confidence is **to read the class notes page by page and cover by cover multiple times**. We can divide the entire syllabus into two parts-

PART A CONCEPTUAL (EXANTE PREPARATION REQD)

EQUITY, BOND AND CONVERTIBLES

INTERNATIONAL FINANCE

DERIVATIVES

PORTFOLIO MANAGEMENT

PART B MECHANICAL (EXPOST PREPARATION REQD)

CAPITAL BUDGETING

LEASING AND OTHER FINANCIAL SERVICES

MERGERS AND ACQUISITION

DIVIDEND POLICY AND CAPITAL STRUCTURE

FINANCIAL MARKETS (MONEY AND CAPITAL MARKETS)

You should prepare for PART A strategically i.e. stressing on pure understanding. Even if somebody skips the past papers, and prepares only from my class notes, it would suffice.

PART B should be prepared tactically. Look at the types of sums that have come in the past exams. You should be able to replicate the solutions with detailed working notes and preparation.

I know you know but still at the risk of sounding repetitive, we have left no stones unturned in preparing for the Mafa paper and if you study positively, you would crack the paper comprehensively.

IMPORTANT TIPS FOR THE NOV 2010 SFM/MAFA EXAMS

1. Exchange Rate Quotations in problems on FOREX can be of 2 types:

Type 1: Rs/\$ - 46.50/46.80

This is the usual way that we have prepared in class and you all know that the above rate means –

If the customer wants to buy the denominator currency (\$), the rate is 46.8.

If the customer wants to sell the denominator currency (\$), the rate is 46.5.

Type 2: USD/INR – 46.50/46.80

As we can see, Rs cannot cost 46.50 or 46.80 \$ and hence this must be Rs/\$. However, what if other unknown currencies are given. After reviewing all papers and literature, I have come to the conclusion that whenever they give the rate in letters –

USD/GBP – 0.75/0.80 – you should treat this as £/\$

These type of rates are given in the RTPs and may cause confusion.

2. Either Binomial model or Black Scholes model is almost certain to show up in the exam. In case of BSM, nowadays they are straight away giving the students three tables –

Table 1 : Natural Log

Suppose $S_0 = 210$, $E = 200$, therefore, $S_0/E = 1.05$. Hence, we require $\ln(1.05)$ – this is directly given in the table as 0.04879

Table 2 : Exponential table

Suppose $r = 8\%$ and $t = 0.25$ years, $r \cdot t = 0.08 \cdot 0.25 = 0.02$. We require $e^{rt} = e^{0.02}$ – this is directly given in the table as 1.0202

Table 3 : Normal Distribution table

They will provide us with area in one tail – left or right.

- If d_1 or d_2 is positive, we take $N(d_1)$ or $N(d_2)$ as $(1 - \text{table value})$.
Example: $d_1 = 1.65$, table value = 0.04947, therefore, $N(d_1) = 1 - 0.04947 = 0.95053$
- If d_1 or d_2 is negative, we take $N(d_1)$ or $N(d_2)$ as table value.
Example: $d_1 = -1.65$, table value = 0.04947, therefore, $N(d_1) = 0.04947$

3. They may set a problem on Black Scholes Model for dividend paying stock. Remember to take the ex-dividend stock price everywhere in the formula.

4. There could be a sum on delta hedging.

Delta is the rate of change of option price with respect to stock price.

- In the Binomial model, Delta of call = $(C_u - C_d)/(uS - dS)$
Delta of put = $(P_u - P_d)/(uS - dS)$
- In the Black Scholes model, Delta of call = $N(d_1)$
Delta of put = $N(d_1) - 1$

If Delta of call is 0.4, it means that if we sell 1000 call (C), we have to buy $1000 \cdot 0.4 = 400$ shares (S) such that the portfolio is hedged.

Similarly, if Delta of put is -0.6, and we buy 1000 put, we have to buy $1000 \cdot 0.6 = 600$ shares (S) such that the portfolio is hedged.

5. Please practice Butterfly spread thoroughly. It has a high chance of hitting the exam.

6. A Short note on swaptions, implied volatility, types of foreign exchange exposure, contango and backwardation, etc could show up.

7. Do practice in a written manner a problem on Sharpe's optimization model (C^*).

8. Performance appraisal of fund managers is also very important.

9. Practice a few sums on decision tree from the papers I have uploaded on the site.

10. Do not ignore the peripheral areas like mergers and acquisitions. A gift of 10 marks is most likely waiting for you there.

11. The concepts of price volatility via duration as also the use of Spot rates and Forward rates using bootstrapping are important.

12. In problems on leasing from the lessee's point of view, check whether post tax k_c is given-
a) If not given, solve the problem using equivalent loan model ie k_d as the dis rate, by the short cut method ignoring ITS. Try to save time at the end and give an alternate solution by using ITS.

b) If k_c is given, you have two choice-

* either use the BHW model using K_c as the dis rate

*or use equivalent model using post tax k_d as the dis rate.

BOTH METHODS ARE PERFECTLY ALLOWED.

Somewhere at the back of your mind you got to feel that we are more prepared

for the exam than anybody else in the entire country. The exam is all about relative i.e. comparative performance. You have shown all your sincerity in preparing for the exam in the last 6 months. I can feel how tired, exhausted and pressured you are. The pressure to succeed has a positive NPV only if it generates confidence at the time it is most needed and makes you work smartly in the exam. The time for most of the hard work has come and now is the time for smart rational thinking. I thoroughly enjoyed preparing you for the exams and I know that you can, you should and you will nail it down.

ALL THE BEST !!

PRACTICE QUESTIONS (WITH ANSWERS)

1)

Consider the following information relating to a swap deal with a notional amount of \$500 million entered by a client with a swap bank:

Remaining term to maturity	4 year 9 months
Reset frequency	Semi-annual
Interest rate of the fixed leg	4%
Interest rate of the floating leg	LIBOR
LIBOR applicable to the current half- year	3.25%
Present market quote for a 5-year swap	5-year US T-note yield + 20/30 bp vs LIBOR
Current yield on 5- year US T- note	3.10%
Current 3-month LIBOR	2.95%

Considering that the client pays the fixed leg, you are **required** to find out value of the swap.

ANS:

Valuation of the fixed leg:

Interest payments on fixed leg due as follows:

3 months	\$ 10 million
9 months	\$ 10 million
15 months	\$ 10 million
21 months	\$ 10 million
27 months	\$ 10 million
33 months	\$ 10 million
39 months	\$ 10 million
45 months	\$ 10 million
51 months	\$ 10 million
57 months	\$ 10 million

Present value of above cash flows after 3 months

$$= 10 + 10 \times PV1FA(1.70\%,9) + 500 \times PV1F(1.70\%,9)$$

$$= 10 + 10 \times 8.280 + 500 \times 0.859$$

$$= \$522.30 \text{ million}$$

$$\text{Present value as on today} = \frac{522.30}{1 + \frac{0.034}{4}} = \$517.898 \text{ million}$$

$$\text{Value of floating leg} = \frac{500 \times \left(1 + \frac{0.0325}{2}\right)}{\left(1 + \frac{0.0295}{4}\right)}$$

$$= \frac{500(1.01625)}{1.007375}$$

$$= \$504.405$$

$$\text{Value of swap} = \text{Value of floating leg} - \text{Value of fixed leg}$$

$$= 504.405 - 517.898$$

$$= -\$13.493 \text{ million}$$

2)

A Japanese firm had swapped ¥ 100 million fixed rate liability into \$ 0.9091 million floating rate liability when the exchange rate was ¥/\$ 110. At that time fixed ¥ vs. 6 month dollar LIBOR swap rate was 3%. The interest payments on both fixed and floating rates are semi-annual. The swap presently has a remaining maturity of 4 year 9 months. The present yen-dollar exchange rate is ¥/\$ 120 and current 5 year fixed ¥ vs. 6 month dollar LIBOR swap is 2%. The present 6 month LIBOR set three months back is 6%, while current 3 month LIBOR is 5%.

You are **required** to find the value of the swap to the Japanese firm.

ANS:

Floating Leg

The value of the floating leg on the reset date is the face value of the principal.

$$\text{Present value of floating leg} = \frac{0.9091 \left(1 + \frac{0.06}{2} \right)}{\left(1 + \frac{0.05}{4} \right)} = \frac{0.9364}{1.0125} = \$0.9248 \text{ million}$$

$$\begin{aligned} \text{Value of floating leg in Yen} &= 0.9248 \times 120 \\ &= \text{¥ } 110.976 \text{ million.} \end{aligned}$$

Fixed Leg:

Months	Cash flow (¥ in million)
3	1.50
9	1.50
15	1.50
21	1.50
27	1.50
33	1.50
39	1.50
45	1.50
51	1.50
57	1.50 + 100

Value of fixed leg 3 months from now

$$\begin{aligned} &= 1.50 + 1.50 \times \text{PVIFA} (1\%, 9) + 100 \times \text{PVIF} (1\%, 9) \\ &= 1.50 + 1.50 \times 8.566 + 100 \times 0.914 \\ &= \text{¥ } 104.8490 \text{ million} \end{aligned}$$

$$\therefore \text{Present value of fixed leg} = \frac{104.8490}{\left(1 + \frac{0.02}{4} \right)} = \text{¥ } 104.327 \text{ million}$$

$\therefore$ The value of swap to the Japanese firm

$$\begin{aligned} &= \text{Value of foreign currency leg} - \text{Value of local currency leg} \\ &= 110.976 - 104.327 \\ &= \text{¥ } 6.649 \text{ million} \end{aligned}$$

3) Divya Jewellery Exporters, Chennai received orders to export diamond jewellery to USA at the rate of one consignment every month in January, February and March, 2007. Amounts will be received at the end of each month. The company has the option to invoice the exports either in US \$ or Euro. The value of the shipments in US\$ and Euro are as under:

Particulars	US \$	Euro	To be received at the end of
First consignment	63,950	50,000	January, 07
Second consignment	96,100	75,000	February, 07
Third consignment	128,150	100,000	March, 07

You, as the Finance Manager of the Company have the following forecast for the exchange rates at the end of the following months:

Currency	January	February	March
\$/Euro	1.2786 / 88	1.2806 / 08	1.2811 / 13
Rs. / \$	45.98 / 46.00	46.05 / 07	46.07 / 09

The current forward rates in the market are as under:

Currency	January	February	March
\$ / Euro	1.2803 / 05	1.2822 / 24	1.2828 / 30
Rs. / \$	46.04 / 06	46.11 / 13	46.13 / 15

You are **required** to find out the rupee inflows and the suggest the currency of invoicing for each consignment:

- If the exposure is hedged.
- If the exposure is left uncovered.

ANS:

Rs. / euro rates can be calculated as follows:

Forward rates

	$(Rs. / euro)_{bid}$	$(Rs. / \$)_{bid} \times (\$ / euro)_{bid}$	Rs.
January, 2007	46.04	46.04×1.2803	58.95
February, 2007	46.11	46.11×1.2822	59.12
March, 2007	46.13	46.13×1.2828	59.18

Expected rates

	$(Rs. / euro)_{bid}$	$(Rs. / \$)_{bid} \times (\$ / euro)_{bid}$	Rs.
January, 2007	45.98	45.98×1.2786	58.79

February,2007	46.05 X 1.2806	58.97
March,2007	46.07 X 1.2811	59.02

Consignment	Invoicing in	Hedged / not hedged	Rate	Inflow In foreign currency	Inflow in Rs.
First(January 07)	\$	Hedged	46.04	63,950	29,44,258
	Euro	Hedged	58.95	50,000	29,47,500
Second (February 07)	\$	Hedged	46.11	96,100	44,31,171
	Euro	Hedged	59.12	75,000	44,34,000
Third (March,07)	\$	Hedged	46.13	128,150	59,11,560
	Euro	Hedged	59.18	1,00,000	59,18,000
First (January, 07)	\$	Un hedged	45.98	63,950	29,40,421
	Euro	Un hedged	58.79	50,000	29,39,500
Second (Feb. 07)	\$	Un hedged	46.05	96,100	44,25,405
	Euro	Un hedged	58.97	75,000	44,22,750
Third (March '07)	\$	Un hedged	46.07	128,150	59,03,871
	Euro	Un hedged	59.02	1,00,000	59,02,000

All the three consignments have to be invoiced in euro and hedged to receive more cash flows.

4) An industrial unit manufacturing motor bikes in Faridabad and exports motorbikes to Australia at a price of Aus\$ 1,500 per unit.

The company imports components from South Korea and the cost of components for each unit is US\$ 250. The company entered into an agreement for the supply of 1,000 units of motorbikes on January 01, 2007. The shipment will be done in the month of March and payment is expected to be received in June. The payment for imported components will also be made at the same time. The company's variable costs per unit are Rs. 12,500 and the allocable fixed costs of the company are Rs. 2,00,00,000. The exchange rates as on 01.01.07 are as follows:

Rs./AUD	34.65/34.67
Rs./USD	45.87/45.89

Vice-President(Finance) who is observing the movements of exchange rates on a day to day basis, has expected that the rupee would appreciate against AUD and depreciate against USD.

He has estimated the following rates for 30th June, 2007.

Rs./AUD	33.80/33.82
Rs./USD	46.20/46.22

You are **required** to find out:

- The change in profitability due to transaction exposure for the supply of 1,000 units.
- By how many units should the company increase its sales so as to maintain the current profit level for the proposed shipment.

ANS:

- The Company's existing profits can be calculated as follows

sales – $1000 \times 1500 \times 34.65 = \text{Rs. } 5,19,75,000$

Less - Variable costs – Imported components $= 1000 \times 250 \times 45.89 = 1,14,72,500$

Rupee component $1,000 \times 12500 = 1,25,00,000$

Fixed cost = 2,00,00,000

Profit = 80,02,500

After the Rupee appreciation against Aus\$ and depreciation against euro, the company's profitability for 1000 units will be

Sales : $1000 \times 1,500 \times 33.80 = \text{Rs. } 5,07,00,000$

Less- Variable cost : (Imports component) $1000 \times 250 \times 46.22 = \text{Rs. } 1,15,55,000$

(Rupee component) $1000 \times 12,500 = \text{Rs. } 1,25,00,000$

Total Variable cost = Rs. 2,40,55,000

Fixed cost = Rs. 2,00,00,000

Profit = Rs. 66,45,000

Decrease in profit $= 80,02,500 - 66,45,000 = \text{Rs. } 13,57,500$

- Let the number of units that need to be sold for keeping the profits at pre appreciation level be X.

Then , $80,02,500 = [1500 \times 33.80 \times X] - [(12500 \times X) + (250 \times 46.22X) + 2,00,00,000]$

$80,02,500 = [50,700X - (12500X + 11,555X + 200,00,000)]$

$80,02,500 + 2,00,00,000 = 50,700X - 24,055X$

$2,80,02,500 = 26,645X$

Therefore $X = 1050.95$ or, 1051 units.

The company should increase its existing supply from 1000 to 1051 to maintain the current profit level of Rs. 80,02,500.

- 5) Vinod Textiles exports leather jackets to France. For the year ended March 31, 2005 the company exported 25000 pieces at an average price of Euro 25 per piece. The average cost of producing each piece for the company is Rs.1,250. The price elasticity of demand for company's product in the French market is 1.50. Prevailing rupee-euro exchange rate during the last year was Rs.56. In the current year, rupee-euro exchange rate is expected to be at 58.

You are **required** to compute

- The change in profit due to transaction exposure.
- The change in profit due to economic exposure, if the company passes on the benefit of depreciation to the buyer.

ANS: a. Current profit at exchange rate of Rs.56 / Euro

$$= \text{Rs.} 25,000 \times (25 \times 56 - 1250)$$

$$= \text{Rs.} 37.50 \text{ lacs}$$

Profit if rupee depreciates to Rs. 58 / Euro

$$= \text{Rs.} 25,000 \times (25 \times 58 - 1250)$$

$$= \text{Rs.} 50.00 \text{ lacs}$$

Increase in profit due to depreciation of rupee (transaction exposure)

$$= \text{Rs.} 50 - 37.50$$

$$= \text{Rs.} 12.50 \text{ lacs}$$

- Selling price of each garment in rupee term = $\text{Rs.} 25 \times 56 = \text{Rs.} 1400$

Price in dollar terms after depreciation of rupee = Euro 24.1379

$$\text{Decrease in price of each piece} = 3.45\%$$

$$\text{Change in quantity demanded} = -1.5 \times (-3.45)\% = 5.18\%$$

$$\text{Number of pieces to be sold} = 25,000 \times (1 + 0.0518) = 26,295$$

$$\text{Profit} = \text{Rs.} 26,295 \times (1400 - 1250)$$

$$= \text{Rs.} 39,44,250$$

$$\text{Increase in profit due to economic exposure} = \text{Rs.} (39,44,250 - 37,50,000)$$

$$= \text{Rs.} 1,94,250.$$

6)

A multinational company based in Germany has its subsidiaries in U.K, Singapore, Hongkong and Japan. The cash position of these subsidiaries for the month of February 2003 is as follows:

U.K.	Cash surplus of £ 1 million
Singapore	Cash deficit of S\$ 1 million
Honkkong	Cash deficit of HK\$ 2 million
Japan	Cash surplus of JPY 50 million

The current exchange rates are given below:

Euro / £	1.5025
S\$ / Euro	1.8910
Euro / HK\$	0.1190
JPY / Euro	130

You are **required** to determine the cash requirement if the MNC adopts

- Centralized cash management.
- Decentralized cash management.

ANS:

- Total cash requirement under centralized cash management
 = + 1 million + JPY 50 million – S\$1 million – HK\$2 million

$$= \text{Euro} \left[1 \times 1.5025 + \frac{50}{130} - \frac{1}{1.8910} - 2 \times 0.119 \right]$$

$$= \text{Euro} [1.5025 + 0.3846 - 0.5288 - 0.2380]$$

 = Euro 1.1203 million

- Total cash requirement under decentralized cash management
 = S\$1 million + HK\$2 million

$$= \text{Euro} \left(\frac{1}{1.8910} + 2 \times 0.119 \right)$$

 = Euro 0.7668 million.

Surplus available at U.K subsidiary and Japan subsidiary is not available for adjustment against the deficit of other subsidiaries.

7)

Mr. Ramesh plans to purchase a vehicle worth Rs.50,000. He approaches GE Citywide to finance the purchase of vehicle under its Express Cash Personal Loans Scheme.

The following details are provided by GE Citywide:

- Monthly outgoings are :

Loan Amount (Rs.)	Monthly Installment (Rs.)		
	12 months	24 months	36 months
25,000	2,417	1,375	1,033
50,000	4,833	2,750	2,066
75,000	7,250	4,125	3,099

- 2% processing fee (minimum Rs.300) to be paid upfront.
- No prepayment charges.
- On the day of prepayment the borrower has to pay only the balance of capital. Interest is allocated to the installments on a straight line basis.

You are required to

- Calculate the flat rate and effective rate of interest that would be charged on the loan granted to Mr. Ramesh by GE Citywide for a loan period of 36 months.
- Calculate the effective rate of interest assuming Mr. Ramesh prepays the loan at the end of the 30th month under GE Citywide finance scheme.

ANS:

- Loan = Rs.50,000
 EMI = Rs.2066

$$\text{Flat rate of interest} = \frac{2066 \times 36 - 50,000}{3 \times 50,000} = 16.25\%$$

Effective rate of interest is 'i' in the following:

$$2066 \text{ PVIFA}_{i, 36} + 1000 - 50,000 = 0$$

'i' is approximately 2.456% p.m. = 33.8% p.a.

- Interest per month on straight line basis = $\frac{50,000 \times 0.1625}{12} = \text{Rs.}677$

As interest is charged on straight line basis each EMI has an interest portion of Rs.677 and a principal portion of Rs.1389.

$$\begin{aligned} \therefore \text{Capital repaid upto 30th installment} &= \text{Rs.}41670 \\ \text{Balance principal to be repaid} &= \text{Rs.}8330 \end{aligned}$$

Effective rate of interest is 'i' in the following:

$$2066 \text{ PVIFA}_{i, 30} + 1000 + 8330 \text{ PVIF}_{i, 30} = 50,000$$

'i' is approximately 2.25% p.m. = 30.6% p.a.

8)

On November 3, 2001 RBI issued a tender notification for 91-day T-Bill for Rs.500 crore. There are three competitive bidders namely, A, B, and C, who responded to the notification of T-Bills and submitted sealed tenders to the RBI. The overall amount quoted through the tender is Rs 1,960 crore. The following table shows the details of the bid submitted by the three bidders.

Name of the bidder	Price (Rs.)	Amount (Rs. in crore)
A	98.90	75
A	98.80	125
A	98.60	150
A	98.25	180
B	98.95	80
B	98.85	120
B	98.60	200
B	98.40	250
C	98.55	90
C	98.45	140
C	98.25	250
C	98.20	300

You are **required** to

- Determine the cut-off point and compute the basis of allotment of the T-Bills
- Compute the weighted average yield of the issue
- Determine the price to be paid by the non competitive bidders
- Compute the average yield for the successful bidders.

ANS: NEXT PAGE

a. **Determination of the cut-off point**

Sl. No.	Name of the bidder	Price (Rs)	Amount (in Rs. crore)	Cumulative amount (in Rs. crore)	
1	B	98.95	80	80	
2	A	98.90	75	155	
3	B	98.85	120	275	
4	A	98.80	125	400	
5	B	98.60	200	600	} ← Cut-Off Price
6	A	98.60	150	750	
7	C	98.55	90	840	
8	C	98.45	140	980	
9	B	98.40	250	1230	
10	C	98.25	250	1480	
11	A	98.25	180	1660	
12	C	98.20	300	1960	

The cut-off price comes to be Rs.98.60. Below this point, amount of bids is short by Rs.100 crore and at this point it has a surplus of Rs.250 crore. The first 4 bids given by A and B are accepted completely, and the next quote given by the bidders being the same, the RBI allots T-Bills proportionately. The fully accepted bids are:

Name of the bidder	Price Quoted (Rs.)	Approved amount (in Rs. crore)
A	98.90	75
A	98.80	125
B	98.95	80
B	98.85	120
TOTAL		400

At the cut off price, RBI allots the 2 bidders proportionately in the following manner

Name of the bidder	Price (Rs)	Amount (in Rs. crore)	Proportionate amount allotted (in Rs. crore)
A	98.60	150	43
B	98.60	200	57
		350	100

Total allotted = 400 + 100 = Rs.500 crores.

b. **Computation of weighted average yield for the issue**

Name of the bidder	Price(Rs.)	Amount	Proportion	Wt. Price	Yield	Wt. Yield
A	98.90	75	0.150	14.84	0.0446	0.00669
	98.80	125	0.250	24.70	0.0487	0.01218
	98.60	43	0.086	8.48	0.0570	0.00490
B	98.95	80	0.160	15.83	0.0426	0.00680
	98.85	120	0.240	23.72	0.0467	0.01121
	98.60	57	0.114	11.24	0.0570	0.00650
			1.000	98.81		0.04828

Yield is calculated as $\left[\frac{\text{Face value}}{\text{Price}} - 1 \right] \times \frac{365}{91}$

c. The non competitive bidders would have to pay weighted average cut off price, which is obtained by taking the average of prices, which comes to be **Rs.98.81** (as calculated in the table).

d. **Computation of average yield of A**

$$\text{Yield} = \left(0.0446 \times \frac{75}{243} + 0.0487 \times \frac{125}{243} + 0.0570 \times \frac{43}{243} \right) = 4.89\%$$

Computation of average yield of B

$$\text{Yield} = \left(0.0426 \times \frac{80}{257} + 0.0467 \times \frac{120}{257} + 0.0570 \times \frac{57}{257} \right) = 4.77\%$$

9)

Zenith Exports Ltd. has proposed to expand its operations for which it requires funds of \$5 million, net of issue expenses, which amounts to 2% of the issue size. It proposes to raise the funds through a GDR issue. It considers the following factors in pricing the issue:

- The expected domestic price of the share is Rs.225, while the face value is Rs.10
- 3 shares underlie each GDR
- Underlying shares are priced at 10% discount to the market price
- Expected exchange rate is Rs.48/\$

You are required to compute

- The number of GDRs to be issued
- Cost of GDR to the company if the dividend expected to be paid in the current year is 25% with a growth rate of 25%
- Gain/loss to a holder of 200 GDRs, if the company proposes a rights issue after the GDR issue in the ratio of 1:4 at a subscription price of Rs.150 per share. Assume the GDR holder exercises the rights and sells his entire holdings at the prevailing GDR price, which will be at a premium of 25% to the prevailing ex-rights domestic price.

Assume the Rs/\$ exchange rate at the time of rights issue and sale by GDR holder to be Rs.50/\$.

ANS:

- | | | |
|--|---|-------------|
| Expected domestic price per share | = | Rs.225 |
| Expected domestic price per GDR = $225 \times 3 \times 0.90$ | = | 607.50Rs. |
| In US Dollars at an exchange rate of Rs.48/\$ | = | \$12.656 |
| Computation of number of GDRs to be issued: | | |
| Amount to be raised = \$5 million/(1-0.02) | = | \$5,102,041 |
| Number of GDRs to be issued = $5102041/12.656$ | = | 403,132 |
- | | | |
|--|---|-----------------------------------|
| Computation of cost of GDR to the company: | | |
| Price of GDR, P_0 | = | Rs.607.50 |
| Expected dividend, $D_1 = Rs10 \times 0.25 \times 1.25 \times 3$ | = | Rs.9.375 |
| Growth rate = $g = 25\%$ | | |
| Flotation cost of issuing GDR, f | = | 2% |
| Cost of GDR = $D_1/P_0(1-f) + g$ | = | $9.375/\{607.50(1-0.02)\} + 0.25$ |
| | = | 26.57% |
- | | | |
|--|---|-------------|
| Computation of gain/loss to a holder of 200 GDRs | | |
| Initial investment of the investor = $200 \times \$12.656$ | = | \$2,531.20 |
| Number of rights obtainable = $200 \times 3 \times 1/4$ | = | 150 |
| Investment in 150 shares = 150×150 | = | Rs.22,500 |
| Investment in dollars at an exchange rate of Rs.50 | = | \$450.00 |
| Total investment | = | \$2,981.25 |
| Ex-rights price = $\{225 \times 4 + 150\} / \{4+1\}$ | = | Rs.210. |
| Total divestment value = $(200 \times 3 + 150) \times 210 \times 1.25$ | = | Rs.1,96,875 |
| Divestment value in dollars at an ex rate of Rs.50 | = | 3,937.50 |
| The gain of the investor = $3937.50 - 2981.25$ | = | \$956.25 |

10)

First Finance Corporation, a leading US private equity fund has recently started its operations in the Indian market by way of providing equity and mezzanine finance to corporates desiring public offering of their equity.

Sri Sai Balaji Food Processing Pvt. Ltd. is a fast growing Hyderabad based food processing company. It intends to acquire some advanced food processing machines from Germany. The Managing Director of Sri Sai Balaji approaches First Finance Corporation Ltd. to make an equity investment of Rs.15 crore.

The current EPS of Sri Sai Balaji is Rs.9 and the expected growth rate of EPS as estimated by the company for the coming year is as follows:

Growth rate in EPS (%)	Probability (%)
10	20
20	50
30	30

The forecast of the Financial Analyst of First Finance regarding the P/E ratio for the Indian Food Processing industry is as follows:

P/E ratio	Probability (%)
15	30
22	45
30	25

The salient features of investment policies of First Finance Corporation Ltd. are as follows:

- The time horizon of all investments made is 1 year
- The target return should be 40%
- The probability of achieving the target return should be at least 72%
- Divestment is priced at industry P/E ratio.

You are **required** to use the normal distribution table and compute the price per share at which First Finance Corporation Ltd. should invest in Sri Sai Balaji Food Processing Pvt. Ltd.

ANS:

Growth rate in EPS	P/E ratio	Exp. EPS (Rs.)	Exp. Price (Rs.)	Joint Prob. %	Expected price – Average price	(Expected price – Average Price) ²	(Expected price – Average Price) ² × Prob.
(1)	(2)	(3)	(4)	(5)	(6)	7 = (6) ²	8 = (5) x (7)
0.10	15	9.9	148.5	0.06	– 89.99	8098.20	485.89
0.20	15	10.8	162.0	0.15	– 76.49	5850.72	877.61
0.30	15	11.7	175.5	0.09	– 62.99	3967.74	357.10
0.10	22	9.9	217.8	0.09	– 20.69	428.08	38.53
0.20	22	10.8	237.6	0.225	– 0.89	0.7921	0.18
0.30	22	11.7	257.4	0.135	18.91	357.59	48.27
0.10	30	9.9	297.0	0.05	58.51	3423.42	171.17
0.20	30	10.8	324.0	0.125	85.51	7311.96	914.00
0.30	30	11.7	351.0	0.075	112.51	12658.5	949.39
		Average Price	238.49				3842.14
							$\sigma_P = \sqrt{3842.14}$ = 61.98

Probability of divestment price should be more than 72%

Let x be the divestment price

∴ Value of Z should be – 0.58

$$Z = \frac{x - \bar{x}}{\sigma} = -0.58$$

$$\frac{x - 238.49}{61.98} = -0.58$$

$$x = \text{Rs. } 202.54.$$

Target return = 40%

$$\text{i.e. } \frac{202.54 - P}{P} = 0.4$$

$$P = \frac{202.54}{1.4} = \text{Rs. } 144.67$$

Hence, First Finance should invest at Rs.144.67/share.

11)

Shankarshan Roy, a portfolio manager is of the opinion that share of Satyam Computers will rise. He is considering the following quotation relating to options on the share of Satyam Computers:

Company	Current market price (Rs.)	Instrument type	Expiry date	Strike price (Rs.)	Premium (Rs.)	No. of shares per contract
Satyam Computers	280	Call option	25.04.2002	280	20	1200
		Put option	30.05.2002	280	10	1200

Mr. Roy estimates the probability distribution of price of Satyam Computers share as follows:

Price per share	Probability of share price	
	on 25.04.2002	On 30.05.2002
260	0.03	0.00
270	0.07	0.05
280	0.10	0.10
290	0.20	0.15
300	0.45	0.30
310	0.15	0.40

Debashish Sarkar is a high networth client of Mr. Roy. Mr. Sarkar is relatively conservative and the utility values for the changes in his asset are as under:

Change (Rs.)	+36,000	+24,000	+12,000	0	-12,000	-24,000
Utility	1.0	0.8	0.7	0.6	0.1	0

Ignoring the time value of money you are **required** to find out which from the following three alternatives maximizes the expected utility of Mr. Sarkar, if he

- Buys now one call option contract expiring on 25.04.2002
- Sells now one put option contract expiring on 30.05.2002
- Buys now 1200 shares of Satyam Computers and sell them on 30.05.2002.

ANS:

- a. Call option contract expiring on 25.04.2002

Expiration Day Price	Gain (Loss) due to one call option	Change in Asset value	Probability	Utility
260	(-) 20	(-) 20 × 1200 i.e., (-) 24,000	0.03	0
270	(-) 20	(-) 20 × 1200 i.e., (-) 24,000	0.07	0
280	(-) 20	(-) 20 × 1200 i.e., (-) 24,000	0.10	0
290	(-) 10	(-) 10 × 1200 i.e., (-) 12,000	0.20	0.1
300	0	0 × 1200 i.e., 0	0.45	0.6
310	10	10 × 1200 i.e., 12,000	0.15	0.7

$$\begin{aligned}\text{Therefore, estimated utility} &= 0.03 \times 0 + 0.07 \times 0 + 0.10 \times 0 + 0.2 \times 0.1 + 0.45 \times 0.6 + 0.15 \times 0.7 \\ &= 0.395\end{aligned}$$

- b. Put option contract expiring on 30.05.2002

Expiration Day Price	Gain/Loss due to one put option	Change in Asset Value	Probability	Utility
260	(-) 10	(-)10 × 1200 i.e., (-)12,000	0.00	0.1
270	0	0 × 1200 i.e., = 0	0.05	0.6
280	10	10 × 1200 = 12,000	0.10	0.7
290	10	12,000	0.15	0.7
300	10	12,000	0.30	0.7
310	10	12,000	0.40	0.7

$$\begin{aligned}\text{Therefore estimated utility} &= 0.00 \times 0.1 + 0.05 \times 0.6 + 0.1 \times 0.7 + 0.15 \times 0.7 + 0.3 \times 0.7 + 0.4 \times 0.7 \\ &= 0.695.\end{aligned}$$

- c. Buying now 1,200 Satyam Shares and selling on 30.5.2002

Price as on 30.5.2002	Change in Asset Value	Probability	Utility
260	- 24,000	0.00	0
270	- 12,000	0.05	0.1
280	0	0.10	0.6
290	12,000	0.15	0.7
300	24,000	0.30	0.8
310	36,000	0.40	1.0

$$\begin{aligned}\text{Expected utility} &= 0.00 \times 0 + 0.05 \times 0.1 + 0.1 \times 0.6 + 0.15 \times 0.7 + 0.3 \times 0.8 + 0.4 \times 1.0 \\ &= 0.81\end{aligned}$$

Therefore, the expected utility of Mr. Sarkar is maximum under third alternative.

12)

A portfolio manager is considering the following two bonds for inclusion in the portfolio:

- Bond A is a 25-year maturity bond currently selling at Rs 89.0. It pays an annual coupon @ 8%.
- Bond B is a 15-year maturity bond selling at Rs. 90.5. It pays an annual coupon @ 7.25%

He predicts an upward sloping yield curve and forecast that after 5 years a 20-year bond will give an YTM of 9% and a 10-year bond will give an YTM of 8%. If investment horizon of the portfolio manager is five years, which bond should he pick? The reinvestment rate is 5%.

ANS:

Bond A

After 5 years the maturity of 25-year bond will be 20 years. The predicted yield of 20-year bond is 9% and its expected price will be

$$8.0 \times PVIFA_{(9,20)} + 100.00 \times PVIF_{(9,20)} = \text{Rs. } 90.832$$

$$\begin{aligned} \text{At the 5\% of reinvestment rate, the five-coupon income will be} &= 8.00 \times FVIFA(5,5) \\ &= \text{Rs. } 44.208 \end{aligned}$$

$$\begin{aligned} \text{Hence total income that may accrue to the bondholders after 5 years} &= 90.832 + 44.208 \\ &= \text{Rs. } 135.04. \end{aligned}$$

$$\begin{aligned} \text{Therefore 5 year return} &= (1+i)^5 = \frac{135.04}{89.0} \\ i &= 8.7\% \end{aligned}$$

Bond B

After 5 years the maturity of 15-year bond will be only 10 years. The predicted yield of 10-year bond is 8% and its expected price will be

$$7.25 \times PVIFA_{(8,10)} + 100.00 \times PVIF_{(8,10)} = \text{Rs. } 94.9475$$

$$\begin{aligned} \text{At the 5\% of reinvestment rate, the five-coupon income will be} &= 7.25 \times FVIFA(5,5) \\ &= \text{Rs. } 40.064 \end{aligned}$$

$$\begin{aligned} \text{Hence total income that may accrue to the bondholders after 5 years} &= 94.9475 + 40.064 \\ &= \text{Rs. } 135.0115 \end{aligned}$$

$$\begin{aligned} \text{Therefore 5 year return} &= (1+i)^5 = \frac{135.0115}{90.5} \\ i &= 8.33\% \end{aligned}$$

As the return from bond A is higher, it should be selected.

13)

An investor holds the following stocks in his portfolio. All these stocks were purchased on March 1, 2002

at the following prices:

Name of the company	No. of shares	Price per share
Sonata Cements	1000	Rs.28.00
J. K. Cosmetics	4000	Rs. 7.00
Prism Tyres	2000	Rs.14.00
Sonal Software	500	Rs.56.00

The correlation coefficients of these stocks' return with the market and their standard deviation of returns were as follows:

	Standard Deviation	Correlation Coefficient with the market index
Sonata Cements	20%	0.95
J.K. Cosmetics	18%	0.85
Prism Tyres	14%	0.72
Sonal Software	11%	0.45

On February 28, 2003, the market prices and standard deviation of the returns of these four stocks were as follows:

Name of the company	Price per share	Standard Deviation (%)
Sonata Cements	Rs.34.00	22.00%
JK Cosmetics	Rs. 5.50	17.00%
Prism Tyres	Rs.10.00	15.50%
Sonal Software	Rs.70.00	12.50%

If the standard deviations of market's return is constant at 15% and assuming that correlation coefficients of stock's returns with the market index remains unchanged during last year, estimate the changes in the proportions of systematic and unsystematic risk of the portfolio.

(The covariance of returns between two stocks is product of their betas and market variance.)

ANS:

Total investment

Sonata Cements	1000 × 28	28000
J. K. Cosmetics	4000 × 7.00	28000
Prism Tyres	2000 × 14.00	28000
Sonal Software	500 × 56.00	28000
		112000

Equal amount of investment is made in each of the stocks.

$$\text{Beta of stocks} = \rho \frac{\sigma_i}{\sigma_m}$$

$$\text{Sonata Cements, } \beta_{SC} = 0.95 \times \frac{20}{15} = 1.267$$

$$\begin{aligned}
 \text{J. K. Cosmetics, } \beta_K &= 0.85 \times \frac{18}{15} = 1.02 \\
 \text{Prism Tyre, } \beta_{PT} &= 0.72 \times \frac{14}{15} = 0.672 \\
 \text{Sonal Software, } \beta_{SS} &= 0.45 \times \frac{11}{15} = 0.33 \\
 \text{Portfolio Beta, } \beta_P &= \frac{1}{4}(1.267 + 1.02 + 0.672 + 0.33) \\
 &= 0.82225.
 \end{aligned}$$

Systematic risk of the portfolio

$$\begin{aligned}
 &= \beta_P^2 \sigma_m^2 \\
 &= (0.82225)^2 \times (15)^2 \\
 &= 152.03 (\%)^2.
 \end{aligned}$$

To calculate two stocks we have to use the following formula

$$\begin{aligned}
 \text{Cov}_{JK} &= \beta_J \beta_K \sigma_m^2 \\
 \text{Cov}_{SJ} &= 1.267 \times 1.02 \times 225 = 290.78 (\%)^2 \\
 \text{Cov}_{BP} &= 1.267 \times 0.672 \times 225 = 191.57 (\%)^2 \\
 \text{Cov}_{SS} &= 1.267 \times 0.33 \times 225 = 94.07 (\%)^2 \\
 \text{Cov}_{JP} &= 1.02 \times 0.672 \times 225 = 154.224 (\%)^2 \\
 \text{Cov}_{JS} &= 1.02 \times 0.33 \times 225 = 75.735 (\%)^2 \\
 \text{Cov}_{PS} &= 0.672 \times 0.33 \times 225 = 49.90 (\%)^2
 \end{aligned}$$

Total risk of the portfolio

$$\begin{aligned}
 &= (0.25)^2 \times (20)^2 + (0.25)^2 \times (18)^2 + (0.25)^2 \times (14)^2 + (0.25)^2 \times (11)^2 + \frac{1}{16} (2 \times 290.78 + 2 \times 191.57 + \\
 &\quad 2 \times 94.07 + 2 \times 154.224 + 2 \times 75.725 + 2 \times 49.90) \\
 &= 25 + 20.25 + 12.25 + 7.5625 + \frac{1}{16} (581.56 + 383.14 + 188.14 + 308.448 + 151.47 + 99.8) \\
 &= 65.0625 + 107.034 = 172.097 (\%)^2
 \end{aligned}$$

$$\text{Unsystematic risk} = 172.097 - 152.03 = 20.067 (\%)^2$$

$$\text{Proportion of Systematic risk} = \frac{152.03}{172.097} = 88.34\%$$

$$\text{Unsystematic risk} = \frac{20.067}{172.097} = 11.66\%.$$

After one year

When the price of stock changes, the weightage of the stocks value also changes and as the S.D. of the stock changes their beta also changes.

Investment value

Sonata Cements	34 × 1000	34000
J.K. Cosmetics	5.50 × 4000	22000
Prism Tyres	10 × 2000	20000
Sonal Software	70 × 500	35000
		111000

New Weights of the stocks in the portfolio

Sonata Cements	34000/111000	0.306
J.K. Cosmetics	22000/111000	0.198
Prism Tyres	20000/111000	0.18
Sonal Software	35000/111000	0.316

Beta of the stock after one year

Sonata Cements	$0.95 \times \frac{22}{15}$	1.393
J.K. Cosmetics	$0.85 \times \frac{17}{15}$	0.9633
Prism Tyres	$0.72 \times \frac{15.5}{15}$	0.794
Sonal Software	$0.45 \times \frac{12.5}{15}$	0.375

New Covariances between Stock's return

$$\text{Cov}_{SJ} = 1.393 \times 0.9633 \times 225 = 301.922$$

$$\text{Cov}_{SP} = 1.393 \times 0.744 \times 225 = 227.137$$

$$\text{Cov}_{SS} = 1.393 \times 0.375 \times 225 = 357.8$$

$$\text{Cov}_{JP} = 0.9633 \times 0.744 \times 225 = 161.256$$

$$\text{Cov}_{JS} = 0.9633 \times 0.375 \times 225 = 81.278$$

$$\text{Cov}_{PS} = 0.744 \times 0.375 \times 225 = 62.775$$

New total risk of the portfolio

$$(0.306)^2 \times (22)^2 + (0.198)^2 \times (17)^2 + (0.18)^2 \times (15.5)^2 + (0.316)^2 \times (12.5)^2 + 2 \times 0.306 \times 0.198 \times 301.922 + 2 \times 0.306 \times 0.18 \times 227.137 + 2 \times 0.306 \times 0.316 \times 357.8 + 2 \times 0.198 \times 0.18 \times 161.256 + 2 \times 0.198 \times 0.316 \times 81.278 + 2 \times 0.18 \times 0.316 \times 62.775 = 244.41(\%)^2$$

Portfolio beta

$$= 0.306 \times 1.393 + 0.198 \times 0.9633 + 0.18 \times 0.744 + 0.316 \times 0.375 = 0.8694.$$

Systematic risk of the portfolio

$$= \beta_p^2 \sigma_m^2 = (0.8694)^2 \times (15)^2 = 170.067(\%)^2.$$

$$\text{Unsystematic risk} = 170.067 - 244.41 = 74.34(\%)^2.$$

$$\text{Proportion of systematic risk} = \frac{(170.067)}{244.41} = 0.696 = 69.6\%.$$

$$\text{Unsystematic risk} = \frac{74.34}{244.41} = 0.304 = 30.4\%.$$

Clearly proportion of systematic has decreased from 88.34% to 69.6% and unsystematic risk has increased from 11.68% to 30.4%.

PROBLEMS THAT WERE DISCUSSED IN CLASS (WITH ANSWERS)

1)

Consider the following cash flows relating to a project proposed to be undertaken by Alpha Industries Ltd.:

Year	Cash flow (Rs.lakhs)
0	-1500
1	300
2	500
3	400
4	200

The cost of capital of the company is 18% and the risk-free rate of discount is 7%. The above project enables the company to make a follow-on investment in the year 3. The cash flows of the follow-on investment are as follows:

Year	Cash flow (Rs.lakhs)
3	-1000
4	900
5	850
6	750
7	800

The analyst of the company estimates that the present value of the follow-on investment follows a lognormal distribution with a standard deviation of 30%.

You are **required** to determine whether the company should make the original investment, keeping in view the value of the follow-on investment.

$$\text{NPV of the present project} = -1500 + \frac{300}{1.18} + \frac{500}{1.18^2} + \frac{400}{1.18^3} + \frac{200}{1.18^4} = -540.06$$

Ans:

Let us now value the follow-on investment option as a call option (C0) using BSM. The inputs are -

$$\text{PV of the follow-on investment cash flows (S0)} = \frac{900}{1.18} + \frac{850}{1.18^2} + \frac{750}{1.18^3} + \frac{800}{1.18^4}$$

$$= 2242.27 / 1.18^3 = 1364 \text{ lakhs}$$

$$E = 1000, r = 0.07, sd = 0.3, t = 3 \text{ years}$$

$$d1 = 1.26, d2 = 0.74$$

$$N(d1) = 0.896165, N(d2) = 0.77035$$

Therefore, C0 = 595 lakhs

Hence, NPV of the project considering Real option = $-540.06 + 595 = 54.94$ lakhs

So, the project which was earlier unviable has now become viable given the value of real option.

2) VALUATION OF SWAPS

A swap has no value to begin with (as it is entered at market rates). However, with the passage of time, a swap may come to acquire a positive/negative value to one party.

Value of swap = Difference between fixed and floating leg

The LIBOR on the valuation date shall be used to discount the floating leg

The fixed swap quote will be used to discount the fixed leg.

Also, the fixed flows would be considered for the entire life of the swap. However, the floating flows would be considered only for the next interest date on the basis of the LIBOR set for such period. In fact, if the valuation date happens to be an interest date itself, the value of the floating leg would be equal to the principal amount.

Consider the following information relating to a swap deal with a notional amount of \$500 million entered by a client with a swap bank:

Remaining term to maturity	4 year 9 months
Reset frequency	Semi-annual
Interest rate of the fixed leg	4%
Interest rate of the floating leg	LIBOR
LIBOR applicable to the current half- year	3.25%
Present market quote for a 5-year swap	5-year US T-note yield + 20/30 bp vs LIBOR
Current yield on 5- year US T- note	3.10%
Current 3-month LIBOR	2.95%

Considering that the client pays the fixed leg, you are **required** to find out value of the swap.

ANS:

Valuation of the fixed leg:

Interest payments on fixed leg due as follows:

3 months	\$ 10 million
9 months	\$ 10 million
15 months	\$ 10 million
21 months	\$ 10 million
27 months	\$ 10 million
33 months	\$ 10 million
39 months	\$ 10 million
45 months	\$ 10 million
51 months	\$ 10 million
57 months	\$ 10 million

Present value of above cash flows after 3 months

$$= 10 + 10 \times PVIFA(1.70\%,9) + 500 \times PVIF(1.70\%,9)$$

$$= 10 + 10 \times 8.280 + 500 \times 0.859$$

$$= \$522.30 \text{ million}$$

$$\text{Present value as on today} = \frac{522.30}{1 + \frac{0.034}{4}} = \$517.898 \text{ million}$$

$$\text{Value of floating leg} = \frac{500 \times \left(1 + \frac{0.0325}{2}\right)}{\left(1 + \frac{0.0295}{4}\right)}$$

$$= \frac{500(1.01625)}{1.007375}$$

$$= \$504.405$$

$$\text{Value of swap} = \text{Value of floating leg} - \text{Value of fixed leg}$$

$$= 504.405 - 517.898$$

$$= -\$13.493 \text{ million}$$

3)

Pacific Leather Goods Ltd., an Indian manufacturer exports leather goods to USA. The company is exporting 5000 units at a price of \$60. The company has imported some specialty chemicals from Europe to produce the export items. The cost of chemical per unit of leather good stands at Euro 10. The fixed overhead costs per unit comes at Rs.250 and other variable overheads, including the freight cost, add upto Rs.1250 per unit. The payments for both exports and imports are due in six months.

The current exchange rates are as follows:

Rs./\$ 46.90

Rs./Euro 40.40

After six months (at the time of settlement of payments) the exchange rate turns out as follows:

Rs./\$ 47.90

Rs./Euro 41.25

You are **required** to

- a. Calculate the loss/gain due to transaction exposure.
- b. Based on the following additional information calculate the losses/gains due to transaction and operating exposure if the contracted export price per unit is Rs.2700:
 - The current exchange rate changes to
 - Rs./\$: 47.50
 - Rs./Euro : 40.80
 - Price elasticity of demand for the company's product in the USA is estimated to be 1.60
 - The Payments are to be settled at the end of 6th month.

ANS:

$$\begin{aligned}
 \text{a. Profit at the current exchange rates} &= 5000 [60 \times 46.90 - (10 \times 40.40 + 250 + 1250)] \\
 &= 500 [2814 - 1904] \\
 &= 5000 \times 910 = \text{Rs.45.50 lakhs}
 \end{aligned}$$

$$\begin{aligned}
 \text{Profit after the change in exchange rate} &= 5000 [60 \times 47.90 - (10 \times 41.25 + 250 + 1250)] \\
 &= 5000 [2874 - 1912.5] \\
 &= 5000 \times 961.5 = \text{Rs.48.075 lakhs}
 \end{aligned}$$

$$\begin{aligned}
 \therefore \text{Gain due to transaction exposure} &= 48.075 - 45.50 \\
 &= \text{Rs.2.575 lakhs.}
 \end{aligned}$$

$$\text{b. Profit based on new exchange rate} = 5000 [2700 - (10 \times 40.80 + 250 + 1250)] = \text{Rs.39.60 lakhs}$$

$$\begin{aligned}
 \text{Profit after change of exchange rate at the end of 6 month} &= 5000 [2700 - (10 \times 41.25 + 250 + 1250)] \\
 &= \text{Rs.39.375 lakhs}
 \end{aligned}$$

$$\begin{aligned}
 \therefore \text{Decline in profit due to transaction exposure} &= 39.60 - 39.375 = \text{Rs.0.225 lakhs}
 \end{aligned}$$

Current price of each unit in dollar term

$$= \frac{2700}{46.90} = \$57.57$$

$$\text{After the change in exchange price per unit in dollar term} = \frac{2700}{47.50} = \$56.84$$

$$\therefore \% \text{ reduction in price} = \frac{57.57 - 56.84}{57.57} = 1.27\%$$

$$\begin{aligned}
 \therefore \text{Increase in demand due to reduction in price} &= 1.27 \times 1.60 = 2.03\%
 \end{aligned}$$

$$\begin{aligned}
 \therefore \text{Size of the increased order} &= 5000 (1 + 0.0203) \\
 &= 5102 \text{ units}
 \end{aligned}$$

$$\begin{aligned}
 \therefore \text{Profit} &= 5102 [2700 - (10 \times 41.25 + 250 + 1250)] \\
 &= 5102 \times 787.5 \\
 &= \text{Rs.40.18 lakhs}
 \end{aligned}$$

$$\begin{aligned}
 \therefore \text{Increase in profit due to operating exporter} &= 40.18 - 39.60 \\
 &= \text{Rs.0.58 lakhs.}
 \end{aligned}$$

- 4) The covered after-tax lending and borrowing rates for three units of a Multinational Corporation located in the United States, Singapore and Hong Kong are

	Lending (%)	Borrowing (%)
United States	3.1	3.9
Singapore	3.0	4.2

Hong Kong	3.2	4.4
-----------	-----	-----

Currently, the Singapore and Hong Kong units owe \$2 million and \$ 3 million, respectively to their US parent. The Singapore unit also has \$ 1 million in receivables from its Hong Kong affiliate. The timing of these payments can be changed by up to 60 days in either direction. If US Parent is borrowing funds, while both the Singapore and Hong Kong subsidiaries have surplus cash available, you are **required** to

- Determine the MNC's optimal leading and lagging strategies
- Calculate the net profit impact of these adjustments
- Indicate the change in the MNC's optimal strategy, if the US parent has surplus cash available.

ANS: a. Both Singapore and Hong Kong subsidiaries (which have surplus cash) should speed up their payments to the US parent(which is in deficit of cash), since the borrowing rate (3.9%) in US is more than the lending rates in Singapore (3%) and Hong Kong (3.2%). However, the Hong Kong unit should lag its payments to its Singapore affiliate, since lending rate in Singapore (3%) is less than the lending rate in Hong Kong (3.2%)

b. **Speeding up the payments by Singapore and Hong Kong subsidiaries to the US parent:**

The US parent reduces its borrowings by \$5,000,000, when it receives funds 60 days earlier from its affiliates.

Therefore, the interest savings by the US parent = $\$5,000,000 \times (3.9/100) \times (60/360) = \$ 32,500$

Since both Singapore and Hong Kong affiliates are paying 60 days earlier to their US parent, the available cash with them will be reduced by \$2 million and \$3 million respectively.

Therefore,

The interest foregone by Singapore affiliate = $\$2,000,000 \times (3/100) \times (60/360) = \$ 10,000$

The interest foregone by Hong Kong affiliate = $\$3,000,000 \times (3.2/100) \times (60/360) = \$ 16,000$

The net savings from this transaction =

Interest saving by the US parent – Interest foregone by Singapore and Hong Kong affiliates

= $\$ 32,500 - (\$ 10,000 + \$ 16,000) = \$6,500$

Lagging the payment by Hong Kong subsidiary to its Singapore affiliate:

Cash available with Hong Kong subsidiary will be more by \$1,000,000, when it lags the payment by 60 days

Interest earned by it = $\$1,000,000 \times (3.2/100) \times (60/360) = \$ 5,333$

Interest foregone by Singapore affiliate = $\$1,000,000 \times (3/100) \times (60/360) = \$ 5,000$

The net savings from this transaction = \$ 5,333 – \$ 5,000 = \$ 333

- c. If the US parent has surplus cash, Singapore subsidiary should lead its payments to the US parent, since lending rate in US (3.1 %) is more than the lending rate in Singapore (3%). However, Hong Kong subsidiary should lag the payment to the US parent, since lending rate in US (3.1 %) is less than the lending rate in Hong Kong (3.2%).

Similarly, Hong Kong subsidiary should lag the payment to its Singapore affiliate, since interest rate in Hong Kong (3.2%) is more than the lending rate in Singapore (3%).

5)

A multinational white goods company based in US has its subsidiaries in UK, France, Japan and Australia. The following are the cash flows occurred during December 2001 among the subsidiaries and the parent company:

From	To	Amount
UK subsidiary	France subsidiary	£ 500,000
France subsidiary	Australia subsidiary	Euro 600,000
Japan subsidiary	France subsidiary	Yen 50 million
Australia subsidiary	US Parent	AUD 750,000
Australia subsidiary	Japan subsidiary	AUD 400,000
Japan subsidiary	UK subsidiary	Yen 10 million
Japan subsidiary	US Parent	Yen 80 million
UK subsidiary	US Parent	£ 650,000
France subsidiary	US Parent	Euro 500,000

The current exchange rates are given below:

\$ / Euro	0.8815
Yen / \$	123.42
\$ / £	1.4226
AUD / \$	1.9153

If the centralized cash management is followed by the company, then you are **required** to arrive at the net cash flows of the subsidiaries and US Parent in US \$ terms.

ANS:

All the subsidiaries and US Parent will convert their receivables and payables in US \$ to determine their net position.

UK subsidiary

Pays	£	500,000	=	\$ 500,000 × 1.4226	=	\$ 711,300 (-)
Receives	Yen	10 million	=	\$ $\frac{10 \text{ million}}{123.42}$	=	\$ 81,024 (+)
Pays	£	650,000	=	\$ 650,000 × 1.4226	=	\$ 924,690 (-)
Net Payment to netting center					=	<u>\$ 1,554,966</u>

France subsidiary

Receives	£	500,000	=	\$ 500,000 × 1.4226	=	\$ 711,300 (+)
Pays	Euro	600,000	=	\$ 600,000 × 0.8815	=	\$ 528,900 (-)
Receives	Yen	50 million	=	\$ $\frac{50 \text{ million}}{123.42}$	=	\$ 405,121 (+)
Pays	Euro	500,000	=	\$ 500,000 × 0.8815	=	\$ 440,750 (-)
Net received from netting center					=	<u>\$ 146,771</u>

Japan subsidiary

Pays	Yen	50 million	=	\$ $\frac{50 \text{ million}}{123.42}$	=	\$ 405,121 (-)
Receives	AUD	400,000	=	\$ $\frac{400,000}{1.9153}$	=	\$ 208,845 (+)
Pays	Yen	10 million	=	\$ $\frac{10 \text{ million}}{123.42}$	=	\$ 81,024 (-)
Pays	Yen	80 million	=	\$ $\frac{80 \text{ million}}{123.42}$	=	\$ 648,193 (-)
Net payment to netting center					=	<u>\$ 925,493</u>

Australia subsidiary

Receives	Euro	600,000	=	\$ 600,000 × 0.8815	=	\$ 528,900 (+)
Pays	AUD	750,000	=	\$ $\frac{750,000}{1.9153}$	=	\$ 391,584 (-)
Pays	AUD	400,000	=	\$ $\frac{400,000}{1.9153}$	=	\$ 208,845 (-)
Net payment to netting center					=	<u>\$ 71,529</u>

US Parent

Receives	AUD	750,000	= \$ $\frac{750,000}{1.9153}$	= \$ 391,584 (+)
Receives	Yen	80 million	= \$ $\frac{80 \text{ million}}{123.42}$	= \$ 648,193 (+)
Receives	£	650,000	= \$ $650,000 \times 1.4226$	= \$ 924,690 (+)
Receives	Euro	500,000	= \$ $500,000 \times 0.8815$	= \$ 440,750 (+)
Net received from netting center				= \$ 2,405,217

6)

Mr. Ramesh plans to purchase a vehicle worth Rs.50,000. He approaches GE Citywide to finance the purchase of vehicle under its Express Cash Personal Loans Scheme.

The following details are provided by GE Citywide:

- Monthly outgoings are :

Loan Amount (Rs.)	Monthly Installment (Rs.)		
	12 months	24 months	36 months
25,000	2,417	1,375	1,033
50,000	4,833	2,750	2,066
75,000	7,250	4,125	3,099

- 2% processing fee (minimum Rs.300) to be paid upfront.
- No prepayment charges.
- On the day of prepayment the borrower has to pay only the balance of capital. Interest is allocated to the installments on a straight line basis.

You are required to

- Calculate the flat rate and effective rate of interest that would be charged on the loan granted to Mr. Ramesh by GE Citywide for a loan period of 36 months.
- Calculate the effective rate of interest assuming Mr. Ramesh prepays the loan at the end of the 30th month under GE Citywide finance scheme.

ANS:

- a. Loan = Rs.50,000
EMI = Rs.2066

$$\text{Flat rate of interest} = \frac{2066 \times 36 - 50,000}{3 \times 50,000} = 16.25\%$$

Effective rate of interest is 'i' in the following:

$$2066 \text{ PVIFA}_{i, 36} + 1000 - 50,000 = 0$$

'i' is approximately 2.456% p.m. = 33.8% p.a.

- b. Interest per month on straight line basis = $\frac{50,000 \times 0.1625}{12} = \text{Rs.}677$

As interest is charged on straight line basis each EMI has an interest portion of Rs.677 and a principal portion of Rs.1389.

- ∴ Capital repaid upto 30th installment = Rs.41670
Balance principal to be repaid = Rs.8330

Effective rate of interest is 'i' in the following:

$$2066 \text{ PVIFA}_{i, 30} + 1000 + 8330 \text{ PVIF}_{i, 30} = 50,000$$

'i' is approximately 2.25% p.m. = 30.6% p.a.

7)

Consider the following data for two companies and the market:

Company/Market	Beta	Standard Deviation (%)	Covariance with Sensex (% ²)
Zee Telefilms	N.A.	45	205
Padmalay Telefilms	1.2	40	N.A.
Sensex	1.0	15	225

Further it is gathered that risk free interest is 7%. Considering the assumptions of regression (Characteristic) line hold good you are required to find

- Beta of Zee Telefilms
 - Covariance of return on Padmalay Telefilms with that of return on sensex
- The coefficients of correlation between
 - Return on Zee Telefilms and return on sensex
 - Return on Padmalaya Telefilms and return on sensex
- The variance of the portfolio formed using Zee Telefilms and Padmalaya Telefilms in the proportion of 2/3 and 1/3 respectively.
- Whether the unsystematic risk of the portfolio is less than individual companies? (β of portfolio is weighted average betas of underlying stocks).

ANS:

$$a. \quad i. \quad \beta_{zee} = \frac{\text{Cov}(Zee, M)}{\text{Var}(M)} = \frac{0.0205}{(0.0225)} = 0.91$$

$$ii. \quad \text{Cov}(\text{Pad}, M) = \beta_{\text{Pad}} \times \text{Var}(M) = 1.2 \times 0.0225 = 0.027 \text{ i.e., } 270 (\%^2)$$

$$b. \quad i. \quad \rho_{zee, M} = \frac{\text{Cov}(zee, M)}{\sigma_{zee} \times \sigma_M} = \frac{0.0205}{0.45 \times \sqrt{0.0225}} = 0.304$$

$$ii. \quad \rho_{\text{Pad}, M} = \frac{\text{Cov}(\text{Pad}, M)}{\sigma_{\text{Pad}} \times \sigma_M} = \frac{0.027}{0.40 \times \sqrt{0.0225}} = 0.45$$

$$c. \quad \text{Var}(\text{Portfolio}) = W_{zee}^2 \sigma_{zee}^2 + W_{\text{Pad}}^2 \sigma_{\text{Pad}}^2 + 2W_{zee} W_{\text{Pad}} \text{Cov}(Zee, \text{Pad})$$

$$W_{zee} = \frac{2}{3}; \quad \sigma_{zee} = 0.45$$

$$W_{\text{Pad}} = \frac{1}{3}; \quad \sigma_{\text{Pad}} = 0.40$$

From the assumptions of characteristic (Regression) line we get

$$\begin{aligned} \text{Cov}(zee, \text{Pad}) &= \beta_{zee} \times \beta_{\text{Pad}} \times \text{Var}(M) \\ &= 0.91 \times 1.2 \times 0.0225 = 0.025 \text{ i.e. } 250 (\%^2) \end{aligned}$$

$$\begin{aligned} \text{Variance}(\text{Portfolio}) &= \left(\frac{2}{3}\right)^2 \times (0.45)^2 + \left(\frac{1}{3}\right)^2 \times (0.40)^2 + 2 \times \frac{2}{3} \times \frac{1}{3} \times 0.025 \\ &= 0.119 \text{ i.e., } 1190 (\%^2) \end{aligned}$$

$$\begin{aligned} d. \quad \text{Unsystematic Risk of Zee Telefilms} &= (1 - \rho_{zee, M}^2) \sigma_{zee}^2 \\ &= [1 - (0.304)^2] \times (0.45)^2 \\ &= 0.184 \text{ i.e., } 1840 (\%^2) \end{aligned}$$

$$\begin{aligned}
 \text{Unsystematic Risk of Padmalay Telefilms} &= (1 - \rho_{\text{Pad}, M}^2) \sigma_{\text{Pad}}^2 \\
 &= [1 - (0.45)^2] \times (0.40)^2 \\
 &= 0.128 \text{ i.e., } 1280 (\%^2)
 \end{aligned}$$

$$\beta_{\text{Portfolio}} = \frac{2}{3} \beta_{\text{zee}} + \frac{1}{3} \beta_{\text{Pad}} = \frac{2}{3} \times 0.91 + \frac{1}{3} \times 1.2 = 1.007$$

$$\begin{aligned}
 \rho_{\text{Port}, M} &= \frac{\text{Cov}(\text{Port}, M)}{\sigma_{\text{Port}} \times \sigma_M} = \beta_{\text{Port}} \times \frac{\sigma_M}{\sigma_{\text{Port}}} \\
 &= 1.007 \times \sqrt{\frac{0.0225}{0.119}} \\
 &= 0.438
 \end{aligned}$$

$$\begin{aligned}
 \text{Unsystematic risk of portfolio} &= (1 - \rho_{\text{Port}, M}^2) \sigma_{\text{Port}}^2 \\
 &= [1 - (0.438)^2] \times 0.119 \\
 &= 0.096 \text{ i.e., } 960 (\%^2)
 \end{aligned}$$

Therefore, we find that the unsystematic risk of the portfolio is less than that of individual stocks. From the result it can be implied that because of constitution of portfolio unsystematic return reduces.

8)

The following are risk and return estimates for two stocks:

Stock	Expected return	Beta	Firm specific standard deviation of the expected return
A	12%	0.75	30%
B	16%	1.10	45%

The market index has a standard deviation of 22% and risk free rate (on T-bills) is 5%.

Required:

- Calculate the standard deviation of expected returns on stocks A & B.
- Suppose a portfolio is to be constructed with the following proportions:

Stock A	0.25
Stock B	0.40
T-bills	0.35

Calculate the expected return, standard deviation of expected return and non-systematic risk (standard deviation) of the portfolio.

ANS:

2. a. Total risk = Systematic risk + Firm specific risk

Stock A

$$\begin{aligned}\text{Systematic risk} &= \beta^2 \sigma_m^2 \\ &= (0.75)^2 \times (22)^2 \\ &= 272.25 (\%)^2\end{aligned}$$

$$\text{S.D.} = 16.5(\%)$$

$$\text{Total risk} = \text{S.D.} = \sqrt{272.25 + (30)^2} = 34.24\%$$

Stock B

$$\begin{aligned}\text{Systematic risk} &= \beta^2 \sigma_m^2 \\ &= (1.10)^2 \times (22)^2 \\ &= 585.64 (\%)^2\end{aligned}$$

$$\text{S.D.} = 24.2\% (\%)$$

$$\text{Total risk} = \text{S.D.} = \sqrt{585.64 + (45)^2} = 51.09 \%$$

- b. Expected return of the portfolio

$$\begin{aligned}&= 0.25 \times 12 + 0.40 \times 16 + 0.35 \times 5 \\ &= 11.15\%\end{aligned}$$

$$\text{Total risk} = \text{Systematic risk} + \text{Unsystematic risk}$$

$$\begin{aligned}\text{Systematic risk of portfolio} &= (\text{Portfolio Beta})^2 \sigma_m^2 \\ &= 0.25 \times 0.75 + 0.40 \times 1.10 + 0.35 \times 0 \\ &= 0.6275\end{aligned}$$

$$\begin{aligned}\text{Systematic risk of portfolio} &= (0.6275)^2 \times (22)^2 \\ &= 190.578 (\%)^2\end{aligned}$$

$$\text{Systematic risk (S.D.)} = 13.805\%$$

$$\begin{aligned}\text{Non-systematic S.D. of portfolio} &= \sqrt{(w_1^2 \sigma_{e_1}^2 + w_2^2 \sigma_{e_2}^2 + w_3^2 \sigma_{e_3}^2)} \\ &= \sqrt{(0.25)^2 \times (30)^2 + (0.40)^2 \times (45)^2 + 0} \\ &= \sqrt{56.25 + 324} \\ &= \sqrt{380.25} \\ &= 19.50 (\%) \\ \text{S.D. of portfolio} &= 13.805 + 19.50 \\ &= 33.305\%\end{aligned}$$

9)

An investor has written call options whose underlying stocks are valued at Rs.30 lakhs. The beta of the underlying stock is 1.25 and delta of the option is 0.72. Expecting an increase of 2% in the market index the investor is considering hedging his position using index futures. Index futures are currently trading at 1175 and the contract multiplier is 100. How many futures contracts should the investor buy/sell to hedge his position?

ANS:

Since the investor has written call option he will lose if market goes up. If market goes up by 3.25%, the value of stock would increase by $1.15 \times 3.25 = 3.74\%$

Value of underlying stock will rise by $= 0.0374 \times 50,00,000 = \text{Rs.}1,87,000$

As the option delta is 0.55, the value of option would increase by $= 0.55 \times 1,87,000 = \text{Rs.}1,02,850$

As market will increase index futures price will also increase by $975 \times 0.0325 = \text{Rs.}31.69$

Gain in futures contract for the buyer $= 200 \times 31.69 = 6,338$

In case of 3.25% rise in the markets investor is likely to lose 1,02,850 from his exposure to call option and therefore he should buy market index futures

$$= \frac{1,02,850}{31.69 \times 200} = 16.23$$

Investor has to buy 16 index futures contract.

THEORY

Chapter 1: FINANCIAL POLICY AND CORPORATE STRATEGY

Strategic management intends to run an organization in a systematized fashion by developing a series of plans and policies known as strategic plans, functional policies, structural plans and operational plans.

In the liberalized business environment, characterized by expanding opportunities and swiftly changing market conditions, strategic planning has assumed greater significance not only for growth but for survival as well.

The strategic plan for a firm spells out its corporate purpose, corporate scope, corporate objectives, and corporate strategies. The corporate purpose defines the mission of the firm. Put differently, it states the *raison d'être* of the firm. The corporate scope delineates the lines of business in which the firm wishes to engage in and the geographic spread of its operations. While the corporate purpose and scope reflect the broad philosophy and nature of the firm's activities, corporate objectives spell out the specific goals sought by the firm. Some goals are stated in quantitative terms such as achieving a market share of 30%, a growth rate of 25% and a ROE of 20%. Other goals are stated in qualitative terms such as "attaining a measure of stability". Corporate strategies or policies are the instruments for achieving corporate objectives. A firm may, for example, follow the policy of vertical integration to achieve growth and stability.

As a key member of the top management group that formulates the strategic plan, the financial manager must

- i) Sensitise the strategic planning group to the financial implications of various choices,
- ii) Ensure that the chosen strategic plan is financially feasible,
- iii) Translate the strategic plan that is finally adopted-usually through an iterative procedure-into a long-range financial plan (typically a five year plan), and
- iv) Coordinate the development of the budget (which covers the first year of the long-range financial plan in great detail).

HEDGE FUNDS

Q. Identify and explain the style classification of a hedge fund, given a description of its investment strategy.

1. **Convertible arbitrage** commonly involves buying undervalued convertible bonds while shorting the underlying stock.
2. **Distressed securities** can earn a high return, because many investors do not want to deal with the legal complications.
3. **Emerging markets** invest in developing economies and generally involve only long positions.
4. **Equity market neutral** exploits price discrepancies through combinations of long and short positions.
5. **Fixed-income arbitrage** takes positions in instruments based on expected changes in the yield curve and/or credit spreads.
6. **Fund of funds** invest in many hedge funds.
7. **Global macro** tend to focus on an area of investment instead of individual securities.
8. **Hedged equity** take long and short positions in under- and overvalued securities.
9. **Merger arbitrage** focuses on returns from mergers, spin-offs, takeovers, etc.

Q. Explain the typical structure of a hedge fund, including the fee structure and the rationale for high water marks.

The most common **compensation structure** of a hedge fund consists of an assets-under-management fee, or *AUM fee*, of about 1% to 2% and an *incentive fee* of 20% of "profits." The definition of profit should be spelled out in the terms of the investment. It could be the dollar return over the initial investment, for example, or the dollar return above the initial investment increased by some hurdle rate.

High water marks (HWM) are typically employed to avoid incentive fee double-dipping. For example, assume a fund is valued and opened for subscription on a quarterly basis. Each quarter the increase in value over the previous quarter is determined and investors pay incentive and management fees accordingly. This is fine as long as the fund's value is higher at each successive valuation. If the value of the fund is lower than the previous quarter, however, the manager receives only the management fee and the previous high value of the fund (i.e., the last fund value at which incentive fees were paid) is established as a HWM. Investors are then required to pay incentive fees only if and when the value of the fund rises above the HWM. Note that HWMs are investor-and subscription-date specific. For those who subscribe while the fund value is below the previously established HWM, that HWM is not relevant. They will pay management fees each quarter as well as incentive fees for increases in value above the value at their subscription date.

Q. Explain the purpose and special characteristics of fund-of-funds hedge funds

A fund of funds (FOF) consists of approximately 10 to 30 hedge funds. The point is to achieve diversification, but the extra layer of management means an extra layer of fees. Often a FOF offers more liquidity for the investor, but the cost is cash drag. Despite the drawbacks, FOF are *good entry-level investments* because the manager of the FOF exercises due diligence.

A FOF may serve as a *better benchmark*, because they suffer from less survivorship bias. A FOF can suffer from **style drift**. Often two FOF that are classified as having the same style have a low correlation of returns.

FOF returns have been more highly correlated with equity markets than those of individual hedge funds. This characteristic has important implications for their use as a diversifier in an equity portfolio (i.e., as correlation increases, diversification decreases).

SECURITY ANALYSIS

Q. **Explain** the top-down approach, and its underlying logic, to the security valuation process.

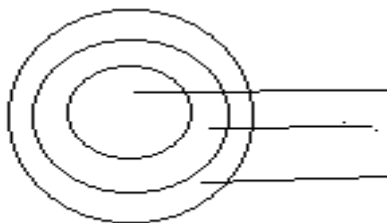
The **top-down, three-step approach** to security valuation starts with a forecast of the direction of the general economy and moves towards an analysis of the industry and the stock.

1. Forecast macroeconomic influences.
2. Determine industry effects.
3. Perform firm analysis.

THE FUNDAMENTAL ANALYSIS FRAMEWORK

Fundamental Analysis is based on the premise that a security has an intrinsic value at any given time which is a function of expected returns and risks. A basic assumption of fundamental analysis is that market price and intrinsic value can differ from time to time, but eventually investors will recognise the discrepancy and act to bring the two values together.

The proper order in which to proceed in fundamental analysis is, first to analyse the overall economy and securities markets. Second analyse the industry within which a particular company operates. Finally, analysis of the company should be considered. The above analysis involves making careful estimates of the expected stream of benefits and the required rate of return (this depends on the risk) for a common stock.





Strategic considerations in economic, industry and company analysis are :-

A. Economic Analysis

- (1) A study of economic trends as indicated by the rate of growth in Gross National Product, employment, aggregate corporate profits , personal disposable income, balance of payment position, inflation, government spending, money supply, etc.
- (2) A study of economic policies of the government including plan priorities, Monetary Policies, Exim Policy, Fiscal Policy, industrial policy, regulation and control of prices, wages and production.
- (3) An analysis of the relationship between economic trends and economic policies and the stability of such relationships.
- (4) A study of world economic trends and their impact on Indian economy.

B. Industry Analysis

- (1) Implications of projected growth in GNP for various industries.
- (2) Implications of plan priorities and plan expenditures for various industries.
- (3) Vulnerability of an industry under government regulation, and control of prices and production
- (4) Implications of industrial and fiscal policies of the government for an industry
- (5) Input - Output analysis of an industry's sales
- (6) Degree of dependence on scarce non-renewable or imported raw materials and energy intensity

- (7) Vulnerability of industry to business cycle
- (8) Linkage between the sectors vulnerable to business cycle and the industry
- (9) Life cycle position of industry
- (10) Price and income elasticity of the end products of the industry
- (11) An analysis of competitive conditions as reflected in any barriers to entry

C. **Company Analysis**

- (1) A trend analysis of company's market share
- (2) An analysis of cost structure and break even analysis
- (3) An analysis of turnover of assets, operating and production efficiencies through ratio analysis
- (4) Leverage and coverage ratio analysis
- (5) Funds flow analysis
- (6) Profitability analysis
- (7) A trend analysis of book value per share
- (8) An analysis of growth in dividend per share and retention policy
- (9) Estimation of dividend yield
- (10) Estimation of price-to-earnings multiple
- (11) As assessment of the quality of assets
- (12) An assessment of the quality of management

Econometric Model Building Approach

For short term economic forecasting an econometric method approach has the advantage of providing a magnitude and direction to the dependent variable, say GNP. However, a precise estimate of the dependent variable (forecast value of GNP) obtained from the econometric model need not be an accurate one, because accuracy of the forecast will depend on the quality of data, the validity of the assumptions underlying the model, and above all upon the model builder's understanding of the underlying economic theory.

In the Indian context, an econometric model for forecasting GNP in a planned economy may not have much of a practical relevance because of changes in planning priorities, government regulation, fiscal policy and control mechanisms of money, credit, prices and wages. Econometric models can be meaningful for future projections if and only if the estimated coefficients are found to be acceptable in respect of their stability over time.

DOW THEORY

It is the earliest theory on technical analysis which provided the basic frame work of technical analysis. It was initially published in the form of journals and later on systematized into a complete write up which has come to be known as DOW THEORY.

The market has 3 movements –

- a) Primary movement (tides)
- b) Secondary movement (waves)
- c) Minor movement (ripples)

Thus, the long terms upward or downward trend in a chart is known as the Primary movement. Significant movements in the opposite direction are called Secondary movements, which further comprise of day-to-day movements called ripples.

FDI VS FII

Both FDI and FII is related to investment in a foreign country. FDI or Foreign Direct Investment is an investment that a parent company makes in a foreign country. On the contrary, FII or Foreign Institutional Investor is an investment made by an investor in the markets of a foreign nation.

In FII, the companies only need to get registered in the stock exchange to make investments. But FDI is quite different from it as they invest in a foreign nation.

The Foreign Institutional Investor is also known as hot money as the investors have the liberty to sell it and take it back. But in Foreign Direct Investment, this is not possible. In simple words, FII can enter the stock market easily and also withdraw from it easily. But [FDI](#) cannot enter and exit that easily. This difference is what makes nations to choose FDI's more than then FIIs.

FDI is more preferred to the FII as they are considered to be the most beneficial kind of foreign investment for the whole [economy](#).

Foreign Direct Investment only targets a specific enterprise. It aims to increase the enterprises capacity or productivity or change its management control. In an FDI, the capital inflow is translated into additional production. The FII investment flows only into the secondary market.

It helps in increasing capital availability in general rather than enhancing the capital of a specific enterprise.

The Foreign Direct Investment is considered to be more stable than Foreign Institutional Investor. FDI not only brings in capital but also helps in good governance practises and better management skills and even technology transfer. Though the Foreign Institutional Investor helps in promoting good governance and improving accounting, it does not come out with any other benefits of the FDI.

While the FDI flows into the primary market, the FII flows into secondary market. While FIIs are short-term investments, the FDI's are long term.

Summary

1. FDI is an investment that a parent company makes in a foreign country. On the contrary, FII is an investment made by an investor in the markets of a foreign nation.
2. FII can enter the stock market easily and also withdraw from it easily. But FDI cannot enter and exit that easily.
3. Foreign Direct Investment targets a specific enterprise. The FII increasing capital availability in general.
4. The Foreign Direct Investment is considered to be more stable than Foreign Institutional Investor

PORTFOLIO REBALANCING

Dynamic strategies for asset allocation are as follows:

1. Buy-and-hold
2. Constant mix
3. Constant-proportion portfolio insurance

Buy-and-hold strategies

A buy-and-hold strategy is featured by an initial mix, say, 60 percent stock and 40 percent treasury bills, which is initially bought and then held. These can be termed as minimum risk and maximum return strategies. In fact, these strategies do not require regular rebalancing, and they are even easy to analyze.

Pay-off for 60/40 Stock/Bill Buy-and-Hold Strategy

DIAGRAM IN CLASS

Let us now focus on the above. It represents a buy and hold strategy with 60/40 mix of stocks and bills. Say, the investor's portfolio is worth Rs.1,000 and the current level of the stock market is 100. the figure explains the following points:

- a. The relationship between the portfolio's value and the stock market's value is linear.

- b. The value of the portfolio is directly proportional to the value of the stock market, the slope being equal to the proportion of stock in the mix i.e., 60 percent which is 0.6.
- c. The value of the portfolio will not fall below the value of initial investment in bills.
- d. With the increase in proportion of the stocks in the portfolio mix, better will be the performance of the buy and hold strategies, when the stocks outperform the bills and when stocks underperform bills.

Exposure for 60/40 Stock/Bill Buy-and-Hold Strategy

DIAGRAM IN CLASS

In the above figure, the asset mix remains same i.e., 60/40 stocks and bills respectively. Below 60 percent of initial wealth of the investor, his risk-tolerance becomes zero. In fact, the graphs for other buy and hold strategies have a slope of one and differ only in terms of the asset level at which the investor's tolerance for risk becomes zero.

Constant mix strategies

These strategies are more dynamic in nature. Investors adopting these strategies tend to maintain an exposure to stocks that is in constant proportion of their wealth. The risk-tolerance level of the investors varies proportionately with the level of their wealth. At the time of changes in the values of the assets, it is required to either purchase or sell the required assets. Normally, rebalancing of the portfolio involves purchase of stocks as they fall in their value. The implementation of dynamic strategies actually involves the environment under which the act of rebalancing can take place. It has been statistically found that rebalancing of a constant mix requires the sale of stocks as they rise in value.

It is found in the real world that the stock markets are perfectly capable of reversing themselves, and such reversals favor constant mix strategies over the buy and hold strategies. Let us take the case where the value of stocks fall from Rs.100 and hold strategies. Let us take the case where the value of stocks fall from Rs.100 to Rs.90 and bounces back to Rs.100. In this case, while an investor going for a buy and hold strategy will face no change in his wealth, the one following the constant mix strategy will. In essence, the buy and hold strategy is the simple up and down movement along a single straight line in a pay-off diagram, whereas in case of a constant mix strategy, each of the rebalancings changes the number of stocks the investor holds. It involves buying of shares when stock prices fall and selling of shares when stock prices rise. The value of a constant mix investor's assets after several rebalancings depends on the final level of the stock market as well as the way in which the stocks move from one period to the other before they reach a final level of the stock market.

Constant proportion portfolio insurance

The constant proportion theory can be written as:

$$\text{Amount in stocks} = m (\text{Assets} - \text{Floor})$$

Where, m = fixed multiplier

The Constant proportion Portfolio Insurance (CPPI) strategy is a constant proportion strategy with multipliers greater than one. The implementation of this strategy calls for selection of the

multiplier and a floor below which he does not want the portfolio value to fall. The floor actually grows at the rate of return on bills, and should be less than one at the initial stage.

Loading CPPI with $m = 2$

Q. Compare and contrast strategic and tactical asset allocation.

Tactical asset allocation is the result of active management wherein managers deviate from the strategic asset allocation to take advantage of any perceived *short-term* opportunities in the market. Hence tactical asset allocation introduces additional risk, which should be justified by additional return (i.e., positive alpha).

Q. Appraise the importance of asset allocation for portfolio performance.

Strategic allocation responds to the interaction of the investor's long-term strategic needs and long-run capital market expectations. The investor's goals are in terms of IPS objectives and constraints.

It should be remembered that the strategic allocation is based upon long-run goals and capital market expectations. **Tactical allocation** may be used if the market experiences short-term disruptions or the manager recognizes mispriced assets, they can change the allocation for short periods.

Since managers are the "experts" at selecting investments, the question is whether strategic allocation is worth the time and effort. The first response is that without a clearly defined strategic allocation, the portfolio may not reflect the investor's desires. Also, the importance of strategic asset allocation has been well-established empirically. One study by the Vanguard Group shows that *more than* 100% of the long-term performance of a portfolio is explained by its strategic asset allocation. Another study puts this number at 94%.

Q. Discuss the rationales for passive, active, and semiactive (enhanced index) equity investment approaches and **distinguish** among those approaches with respect to expected active return and tracking risk.

Passive equity managers do not use forecasts to influence their investment strategies. The most common implementation of passive management is indexing, where the manager invests so as to mimic the performance of a security index. Though indexing is passive in the sense that the manager does not try to outperform the index, the execution of indexing requires that the manager buy securities when the security's weight increases in the index or sell stock when the security's weight decreases in the index. Indexing has grown in popularity since the 1970s and often constitutes an investor's core holding.

Active equity management is the other extreme of portfolio management. Active managers buy, sell, and hold securities in an attempt to outperform their benchmark. Even with the

growth of indexing, active management still constitutes the vast majority of assets under management.

The middle road between the two previous approaches is **semiactive** equity management (a.k.a. enhanced indexing or risk-controlled active management). A semiactive manager attempts to earn a higher return than the benchmark while minimizing the risk of deviating from the benchmark.

Active return is the excess return of a manager relative to the benchmark. Tracking risk is the standard deviation of active return and is a measurement of active risk.

	<i>Passive Management</i>	<i>Semiactive Management</i>	<i>Active Management</i>
Expected active return	Low	Medium	High
Tracking risk	Low	Medium	High

EQUITY STYLE MANAGEMENT

Types of Equity Styles

Equity styles can be classified in many ways. The simplest of the classifications is based on value or growth. For a manager who focuses on growth, the concern is about the growth of the earnings. Taking the most popular ratio used in the determination of whether the stocks are underpriced or overpriced, the price to book ratio, we can understand that the logic in growth investing is pretty simple. If the value of the share is expressed as a multiple of the earnings (the price to book ratio), for the same ratio, the price increases with increase in the earnings. The 'growth manager' seeks stocks that appear to be having good potential for earnings growth. He suffers if the earnings fall or the price to book ratio of the company declines. The 'value manager', in contrast, invests in stocks that have a relatively low value of the price to book ratio. His expectation would be that the price to book ratio of the stocks would some day increase and thus their prices would increase. If the price to book ratio of the stocks does not increase or declines further, he loses. A variation that can be incorporated into the classification of value and growth is the size of the firm.

Including size, the following four classifications are possible:

- Large value stocks
- Large growth stocks
- Small value stocks
- Small growth stocks.

Q. Indian Depository Receipt/Share (IDS) is a mechanism to enable Indians to own overseas stock i.e. derivative Indian securities, where the underlying asset is the equity share in an overseas company.

IDSs have several applications, foremost that it would enable Indians to invest in the equity and accordingly share the growth of overseas companies. More importantly, it would provide domestic companies seeking mergers or acquisitions, an alternative security (to ADSs/GDSs or cash) to settle such a transaction.

The significant advantages of IDS are, they:

- Increase the number of available potential targets, both in terms of quality and strategic fit;
- Provide an engine for high velocity growth by increasing the flexibility to the merged/combined company's capital structure;
- Maintain the competitiveness of Indian bourses as a preferred/necessary destination among global stock markets for international listing;
- Prepare the local markets for closer operational integration with counterparts overseas;
- Provide experience prior to capital convertibility;
- Grow the pool of foreign currency assets belonging to the nation;
- Channel additional non-resident Indian investment into India;
- Reduce the flight of domestic capital overseas through invisible, un-administrable modes;
- Provide Indian investors an opportunity to participate in the growth of world-class Indian companies; and
- Allow Indian stakeholders to participate in global companies with significant (by local standards) Indian operations partaking of international profits and not just that of an MNC's domestic operations.

Q. Explain the rationale for investing in index funds.

An investor may want to invest in index funds to match the market's performance, since an investor realistically cannot expect to outperform the market. Index funds are designed to replicate the composition and performance of a specific index series or market segment.

SOME MORE TOPICS: -TO BE COVERED FROM THE INSTITUTES MAT

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Pg 13.17 to 13.18 – Defending a company in a Takeover Bid

Pg 13.30 – Forms of Downsizing

Pg 13.33 – MBO,LBO

