

INDEX

Q NO.	ABC	CONCEPT	Pg No.
Chapter - 3			
4	B	Weak Efficient Market Empirical Tests	1
Chapter - 4			
16	A	Valuation of Equity Share Based on FCFE (In Line with QB Ques 16)	2
Chapter - 5			
11	C	CAPM	4
12	B	Principles of an Active Portfolio Strategy (APS)	5
Chapter - 7			
13	A	NAV based on Sharpe & Treynor Ratio considering Equity & Cash Component And Risk Per Return (In Line with Q13)	6
14	B	Opening NAV Based on Effective Yield (In Line with Q15 & 16)	9
Chapter - 10			
10	A	Home Currency Approach & Foreign Currency Approach with RADR	10
11	A	NPV considering Effect of Inflation on Revenue & Cost	13
12	B	Characteristics of GDR	17
Chapter - 11			
10	A	Types of Interest Rate Risk	18
Chapter - 12			
3	B	Venture Capital Method of valuing Startups	20
4	A	First Chicago Method of valuing Startups	21
Chapter - 13			
7	B	Swap Ratio (In Line with QB Ques 26)	24
Chapter - 14			
6	A	Unicorn	28
7	A	Government initiatives to create sustainable environment for start-up in India	29

		Startup India and StandUp India Programs (2016) Startup India Seed Fund Scheme (SISFS) (2021)	
8	A	Factors Other than Government initiatives to create sustainable environment for start-up in India	30

Chapter 3 : Security Analysis

Weak Efficient Market Empirical Tests

Question 4: Explain the types of tests that can be employed to empirically verify the weak form of Efficient Market Theory. [RTP NOV'24]

Answer:

Following three types of tests can be employed to empirically verify the weak form of Efficient Market Theory:

(a) Serial Correlation Test: To test for randomness in stock price changes, one has to look at serial correlation. For this purpose, price change in one period has to be correlated with price change in some other period. Price changes are considered to be serially independent. Serial correlation studies employing different stocks, different time lags and different time period have been conducted to detect serial correlation but no significant serial correlation could be discovered. These studies were carried on short term trends viz. daily, weekly, fortnightly and monthly and not in long term trends in stock prices as in such cases. Stock prices tend to move upwards.

(b) Run Test: Given a series of stock price changes each price change is designated + if it represents an increase and – if it represents a decrease. The resulting series may be -, +, -, -, -, +, +.

A run occurs when there is no difference between the sign of two changes. When the sign of change differs, the run ends and new run begins.

To test a series of price change for independence, the number of runs in that series is compared with a number of runs in a purely random series of the size and in the process determines whether it is statistically different. By and large, the result of these studies strongly supports the Random Walk Model.

(c) Filter Rules Test: If the price of stock increases by at least N% buy and hold it until its price decreases by at least N% from a subsequent high. When the price decreases at least N% or more, sell it. If the behaviour of stock price changes is random, filter rules should not apply in such a buy and hold strategy. By and large, studies suggest that filter rules do not out perform a single buy and hold strategy particular after considering commission on transaction.

Chapter 4 : Security Valuation

Valuation of Equity Share Based on FCFE (In Line with QB Ques 16)

Question 16:

Calculate the value of one equity share of X Ltd. from the following Information:

Profit of the company (Before tax)	₹ 8000 crores
Equity share capital of the Company	₹ 19000 crores
No. of Equity Shares	380 crores
Long run growth rate of the company	7%
Risk free Rate of Return	9.50%
Beta of the company	0.1
Market Risk Premium	3.10%
Total Capital expenditure	₹ 20140 crore
Chargeable Depreciation	₹ 17100 crore
Total Increase in working capital	₹ 1755.60 crore
New Debt to be issued for funding	₹ 2062.108 crore
Tax Rate	30%

Note: All calculation to rounded off upto 4 decimal points and final value of equity share to be rounded off upto 2 decimal points.

[MTP OCT'24]

Answer:

Profit After Tax (PAT) or Net Income = ₹ 8000 crores (1 – 0.30) = ₹ 5600 crores

Free Cash Flow to Equity (FCFE) = Net Income - Capital Expenditures + Depreciation +/- Change in Net Working Capital + New Debt Issued - Debt Repayments + Net issue of Preference Shares – Preference Share Dividends

Free Cash Flow to Equity (FCFE) = ₹ 5600 crores - ₹ 20140 crore + ₹ 17100 crore - ₹ 1755.60 crore + ₹ 2062.108 crore = ₹ 2866.508 crore

Cost of Equity = $R_f + \beta (R_m - R_f)$ or $R_f + \beta$ (Market Risk Premium)

= 9.50% + 0.1 x 3.10% = 9.81%

Value of Equity = $\frac{FCFE (1+g)}{Ke-g} = \frac{2866.508 \text{ cr} (1.07)}{0.0981-0.07} = \frac{3067.1636 \text{ cr}}{0.0281} = ₹ 109151.7295$
crore

Value of one Equity Share = $\frac{₹ 109151.7295 \text{ crore}}{380 \text{ crore}} = ₹ 287.24$

Alternatively, it can also be calculated by using per share basis as follows:

FCFE per share = $\frac{FCFE}{\text{No. of Equity Shares}} = \frac{2866.508 \text{ cr}}{380 \text{ crore}} = ₹ 7.5434$

Value of per equity share = $\frac{FCFE (1+g)}{Ke-g} = \frac{7.5434 (1.07)}{0.0981-0.07} = \frac{8.0714}{0.0281} = ₹ 287.24$

Chapter 5 : Portfolio Management

CAPM

Question 11: The expected returns and Beta of three stocks are given below

Stock	A	B	C
Expected Return (%)	20	13	17
Beta Factor	1.9	0.8	1.4

If the risk-free rate is 9% and the expected rate of return on the market portfolio is 14%, examine which of the above stocks are over, under or correctly valued in the market? What shall be the strategy?

[MTP MAR'24]

Answer:

Required Rate of Return is given by

$$R_j = R_f + \beta (R_m - R_f)$$

For Stock A, $R = 9\% + 1.9 (14\% - 9\%) = 18.50\%$

Stock B, $R = 9\% + 0.8 (14\% - 9\%) = 13.00\%$

Stock C, $R = 9\% + 1.4 (14\% - 9\%) = 16.00\%$

Required Return %	Expected Return %	Valuation	Decision
18.50%	20.00%	Under Valued	Buy
13.00%	13.00%	Correctly Valued	Hold
16.00%	17.00%	Under Valued	Buy

Principles of an Active Portfolio Strategy (APS)

Question 12: Explain briefly principles of an Active Portfolio Strategy (APS) [MTP SEP'24]

Answer:

There are four principles of an Active Portfolio Strategy (APS). These are:

(i) Market Timing: This involves departing from the normal i.e., strategy for long run asset mix to reflect assessment of the prospect of various assets in the near future. Market timing is based on an explicit or implicit forecast of general market movement. In most cases investors may go largely by their market sense. Those who reveal the fluctuation in the market may be tempted to play the game of market timing but few will succeed in this game. Further an investment manager has to forecast the market correctly and 75% of the time he is only able to break even after taking into account the cost of errors and cost of transactions.

(ii) Sector Rotation: Sector or group rotation may apply to both stock and bond component of the portfolio. It is used more compulsorily with respect to strategy. The components of the portfolio are used when it involves shifting. The weighting for various industry sectors is based on their asset outlook.

With respect to bond portfolio sector rotation it implies a shift in the composition of the bond portfolio in terms of quality as reflected in credit rating, coupon rate, term of maturity etc.

(iii) Security Selection: Security selection involves a search for under-priced security. If one has to resort to active stock selection he may employ fundamental / technical analysis to identify stocks which seems to promise superior return and concentrate the stock components of portfolio on them. As far as bonds are concerned security selection calls for choosing bonds which offer the highest yields to maturity and at a given level of risk.

(iv) Use of Specialised Investment Concept: To achieve superior return, one has to employ a specialised concept/philosophy particularly with respect to investment in stocks. The concept which have been exploited successfully are growth stock, neglected or out of favour stocks, asset stocks, technology stocks and cyclical stocks.

Chapter 7 : Mutual Funds
NAV based on Sharpe & Treynor Ratio considering Equity & Cash Component And Risk Per Return (In Line with Q13)

Question 13: There are two Mutual Funds viz. D Mutual Fund Ltd. and K Mutual Fund Ltd. Each having close ended equity schemes. NAV as on 31-12-2022 of equity schemes of D Mutual Fund Ltd. is ₹ 70.71 (consisting 99% equity and remaining cash balance) and that of K Mutual Fund Ltd. is ₹ 62.50 (consisting 96% equity and balance in cash). Following is the other information:

Particular	Equity Schemes	
	D Mutual Fund Ltd.	K Mutual Fund Ltd.
Sharpe Ratio	2	3.3
Treynor Ratio	15	15
Standard deviation	11.25	5
Risk free rate of return (R_f)	7%	

There is no change in portfolios during the next month and annual average cost is ₹ 3 per unit for the schemes of both the Mutual Funds.

Required:

(i) Tabulate the expected NAVs of both the schemes if share market goes down by 5% within a month.

(ii) Advise which mutual fund should an investor choose from the perspective of risk per unit of return.

Note: For calculation purpose, consider 12 months in a year and ignore number of days for a particular month.

[RTP MAY'24]

Answer: -

Working Notes:

(i) Decomposition of Funds in Equity and Cash Components

	D Mutual Fund Ltd.	K Mutual Fund Ltd.
NAV on 31.12.14	₹ 70.71	₹ 62.50
% of Equity	99%	96%
Equity element in NAV	₹ 70	₹ 60
Cash element in NAV	₹ 0.71	₹ 2.50

(ii) Calculation of Beta

(a) D Mutual Fund Ltd.

$$\text{Sharpe Ratio} = 2 = \frac{E(R) - R_f}{\sigma_D} = \frac{E(R) - R_f}{11.25}$$

$$E(R) - R_f = 22.50$$

$$\text{Treynor Ratio} = 15 = \frac{E(R) - R_f}{\beta_D} = \frac{22.50}{\beta_D}$$

$$\beta_D = 22.50/15 = 1.50$$

(b) K Mutual Fund Ltd.

$$\text{Sharpe Ratio} = 3.3 = \frac{E(R) - R_f}{\sigma_K} = \frac{E(R) - R_f}{5}$$

$$E(R) - R_f = 16.50$$

$$\text{Treynor Ratio} = 15 = \frac{E(R) - R_f}{\beta_K} = \frac{16.50}{\beta_D}$$

$$\beta_D = 16.50/15 = 1.10$$

(iii) Decrease in the Value of Equity

	D Mutual Fund Ltd.	K Mutual Fund Ltd.
Market goes down by	5.00%	5.00%
Beta	1.50	1.10
Equity component goes down	7.50%	5.50%

(iv) Balance of Cash after 1 month

	D Mutual Fund Ltd.	K Mutual Fund Ltd.
Cash in Hand on 31.12.14	₹ 0.71	₹ 2.50
Less: Exp. Per month	₹ 0.25	₹ 0.25
Balance after 1 month	₹ 0.46	₹ 2.25

NAV after 1 month

	D Mutual Fund Ltd.	K Mutual Fund Ltd.
Value of Equity after 1 month $70 \times (1 - 0.075)$	₹ 64.75	-
$60 \times (1 - 0.055)$	-	₹ 56.70
Cash Balance	0.46	2.25
	65.21	58.95

(ii) Computation to find out more beneficial Mutual fund:

	D Mutual Fund Ltd.	K Mutual Fund Ltd.
$E(R) - R_F$ (a)	22.50	16.50
Risk free rate of return (b)	7	7
Expected Return $(a+b) = (c)$	29.50	23.50
Standard deviation (d)	11.25	5
Risk per unit Return (d/c)	0.38	0.21

Since risk per unit return of D is more than K, hence investor shall choose K Mutual fund from the perspective of risk per unit of return.

Opening NAV Based on Effective Yield (In Line with Q15 & 16)

Question 14: Mr. Kar has invested in three mutual fund schemes as per details below:

	MF X	MF Y	MF Z
Amount of investment (₹)	5,50,000	4,20,000	1,00,000
Dividend received up to 31.03.2023 (₹)	10,000	6,000	Nil
NAV as on 31.03.2023 (₹)	11.50	11.00	9.50
Effective yield p.a. as on 31.03.2023	19.345%	22.59%	-36.50%
Holding period	120 days	100 days	50 days

You are required to calculate Net Asset Value (NAV) at the time of purchase assuming 365 days in a year.

[MAY'24]

Answer: -

Particulars	MF X	MF Y	MF Z
(a) Investments	5,50,000	4,20,000	1,00,000
(b) No. of Days	120	100	50
(c) Effective yield p.a.	19.345%	22.59%	-36.50%
(d) Total Yield = [$\frac{EY}{100} \times \frac{I}{365} \times D$]	$[\frac{19.345}{100} \times \frac{550000}{365} \times 120]$ =34980	$[\frac{22.59}{100} \times \frac{420000}{365} \times 100]$ =25912	$[\frac{-36.50}{100} \times \frac{100000}{365} \times 50]$ = -5000
(e) Dividend Received	10,000	6,000	Nil
(f) Change in NAV (d-e)	=24980	=19912	=-5000
(g) Closing Value = (a+f)	=550000+24980 =574980	=420000+19912 =439912	=100000-5000 =95000
(h) Closing NAV	11.50	11.00	9.50
(i) No. of Units (g/h)	49998.26	39992	10000
(j) Opening NAV (a/i)	11	10.50	10

Chapter 10 : International Financial Management

Home Currency Approach & Foreign Currency Approach with RADR

Question 10: DK Ltd. is considering an investment proposal in Sri Lanka involving an initial investment of LKR 25 billion. The current spot exchange rate is INR/LKR 0.370. The risk free rate in India is 6% and the same in Sri Lanka is 5.02%.

The project will generate a cash flow of LKR 5 billion in the first year. The cash flow will increase by LKR 1 billion each year for the next 4 years. The project will wind up on completion of 5 years with no salvage value. The required rate of return for the project is 8%

(i) You are required to find out the investment worth of the project by using

(1) Home Currency Approach

(2) Foreign Currency Approach

(ii) Compare the outcome under both the approaches.

Given:

PVIF (8%, t)	0.92593	0.85734	0.79383	0.73503	0.68058
PVIF (7%, t)	0.93457	0.87344	0.81630	0.76290	0.71299

Note: Excepts rates show all calculations in Billion upto four decimal points.

[MTP MAR'24]

Answer:

Working Notes: Calculation of Forward Exchange Rates

End of Year	₹/LKR	₹
1	$0.37 \times \frac{1.06}{1.052}$	0.373
2	$0.373 \times \frac{1.06}{1.052}$	0.376
3	$0.376 \times \frac{1.06}{1.052}$	0.379
4	$0.379 \times \frac{1.06}{1.052}$	0.382
5	$0.382 \times \frac{1.06}{1.052}$	0.385

1. Home Currency Approach

Year	Cash Flow Billion LKR	₹ / LKR	Cash flow Billion ₹	PVF @ 8%	PV Billion ₹
1	5	0.373	1.865	0.92593	1.7269
2	6	0.376	2.256	0.85734	1.9342
3	7	0.379	2.653	0.79383	2.1060
4	8	0.382	3.056	0.73503	2.2463
5	9	0.385	3.465	0.68058	2.3582
					10.3716
Less: Investment	25	0.37			9.2500
NPV					1.1216

2. Foreign Currency Approach

$$(1 + 0.06) (1 + \text{Risk Premium}) = 1.08$$

$$1 + \text{Risk Premium} = 1.08/1.06 = 1.01887$$

Therefore, Risk adjusted LKR Rate = $1.01887 \times 1.0502 - 1 = 0.07$ i.e. 7%

Calculation of NPV

Year	Cash Flow (Billion LKR)	PVF @ 7%	PV (Billion LKR)
1	5	0.93457	4.6729
2	6	0.87344	5.2406
3	7	0.81630	5.7141
4	8	0.76290	6.1032
5	9	0.71299	6.4169
			28.1477
Less: Investment			25
NPV			3.1477

Thus, Rupee NPV of the Project = ₹ $0.37 \times 3.1477 = ₹ 1.1646$ billion

Decision: NPV is positive in the approach so, project will worth investment.

NPV considering Effect of Inflation on Revenue & Cost

Question 11: Mr. Vishwas, a friend of Mr. Pramod who is one of the Directors of Ashirwad Limited, is a citizen of Mauritius. His immediate family members including his parents, born in India are residing in India. He has many friends in different parts of India, due to which he happens to visit India on frequent basis. He along with Mr. Pramod evince interest in setting up business in India and formally incorporate a company to commence their operations. Accordingly, a company is called “Aerious Private Ltd.” got incorporated in Mumbai.

To start with he received a business proposal from one of his friends Nimish a consultant. It is estimated that in equivalent terms the business shall require an initial investment of MUR 100 Million and thereafter MUR 2 Million each year will be needed as working capital fund.

**He wished to evaluate whether the business proposal is viable or not. The information related to exchange rate and inflation rate is as follows:
Spot Rate for 1 Mauritian Dollar (MUR) = 1.88 Indian Rupee (INR)
The inflation in India is 6% and in Mauritius is 5%.**

It is expected that this inflation rate will remain unchanged for the next 4 years.

INR 8 Crore out of initial investment shall be required for setting up a plant. The useful life of the plant is 4 years. At the end of 4th year estimated salvage value of this plant shall be INR 80 lakhs. Depreciation of the plant shall be charged on the basis of straight-line method.

40 % of the investment shall be through debt funds from Mauritius at the cost of 10% (post tax) while remaining funds shall be arranged by him and his friends. They expect a rate of return of 12% on their funds.

Expected revenues & costs (excluding depreciation) in real term are as under:

Year	1	2	3	4
Revenues (₹ Crore)	6.00	7.00	8.00	8.00
Costs (₹ Crore)	3.00	4.00	4.00	4.00

Assume that applicable tax rate in India is 30%. Since there is Double tax avoidance agreement between India and Mauritius, the company is not required to pay tax in Mauritius if tax has been paid in India.

The applicable inflation rates for revenues & costs are as follows:

Year	Revenues	Costs
1	10%	12%
2	9%	10%
3	8%	9%
4	7%	8%

He wants an expert opinion for the same investment proposal.

Demonstrate whether investment in this project is viable option or not.

Note: 1. Round off calculations upto 4 decimal points.

2. Show INR calculations in Crore and MUR calculations in Million.

[RTP MAY'24]

Answer:

To evaluate whether investment in same project is a viable option or not, we shall compute the NPV of the project.

Working Note:

(1) Expected Exchange Rates

End of Year	₹	₹/₱
1	$\text{INR } 1.88 \times \frac{1.06}{1.05}$	1.8979
2	$\text{INR } 1.8979 \times \frac{1.06}{1.05}$	1.9160
3	$\text{INR } 1.9160 \times \frac{1.06}{1.05}$	1.9342
4	$\text{INR } 1.9342 \times \frac{1.06}{1.05}$	1.9526

(2) Initial Investment = ₱ 100 Million \times INR 1.88 = INR 18.80 crore

Working Capital (Year 1) = ₱ 2 Million \times 1.8979 = INR 0.3796 crore

Working Capital (Year 2) = ₱ 2 Million \times 1.9160 = INR 0.3832 crore

Working Capital (Year 3) = ₱ 2 Million \times 1.9342 = INR 0.3868 crore

Working Capital (Year 4) = ₱ 2 Million \times 1.9526 = INR 0.3905 crore

(3) WACC = 40% \times 10% + 60% \times 12% = 11.20%

(4) Inflation adjusted Revenue

Year	Revenue (₹)	Revenue (Inflation Adjusted) (₹)
1	6.00 crore	6.00 crore \times 1.10 = 6.60 crore
2	7.00 crore	7.00 crore \times 1.10 \times 1.09 = 8.393 crore
3	8.00 crore	8.00 crore \times 1.10 \times 1.09 \times 1.08 = 10.3594 crore
4	8.00 crore	8.00 crore \times 1.10 \times 1.09 \times 1.08 \times 1.07 = 11.0845 crore

(5) Inflation adjusted Cost

Year	Cost (₹)	Cost (Inflation Adjusted) (₹)
1	3.00 crore	3.00 crore \times 1.12 = 3.3600 crore
2	4.00 crore	4.00 crore \times 1.12 \times 1.10 = 4.9280 crore
3	4.00 crore	4.00 crore \times 1.12 \times 1.10 \times 1.09 = 5.3715 crore
4	4.00 crore	4.00 crore \times 1.12 \times 1.10 \times 1.09 \times 1.08 = 5.8012 crore

(6) Annual cash flows
(₹ Crore)

Year	1	2	3	4
Revenue	6.600	8.393	10.3594	11.0845
Less: Cost	3.360	4.928	5.3715	5.8012
Less: Depreciation	1.800	1.800	1.800	1.800
Profit before Tax (PBT)	1.440	1.665	3.1879	3.4833
Tax @ 30%	0.432	0.4995	0.9564	1.0450
Profit after Tax	1.008	1.1655	2.2315	2.4383
Add: Depreciation	1.800	1.800	1.800	1.800
Cash Flows	2.808	2.9655	4.0315	4.2383

NPV of the Project

Year	0	1	2	3	4
Initial Investment (₹ Crore)	(18.80)				
Working Capital (₹ Crore)	-	(0.3796)	(0.3832)	(0.3868)	(0.3905)
Scrap Value (₹ Crore)					0.8000
W.C Recovered (₹ Crore)					1.5401
Annual Cash flows		2.8080	2.9655	4.0315	4.2383
Net Cash Flow	(18.80)	2.4284	2.5823	3.6447	6.1879
Exchange Rate	1.88	1.8979	1.9160	1.9342	1.9526
Cash Flows (in Million MUR)	(100)	12.7952	13.4776	18.8434	31.6906
PVF@11.20%	1	0.8993	0.8087	0.7273	0.6540
Present value (in Million MUR)	(100)	11.5067	10.8993	13.7048	20.7257

Net Present Value = - MUR 43.1635 Million

Advise: Since NPV of the project is negative the proposal is not a viable option for investment.

Characteristics of GDR

Question 12: Explain the characteristics of Global Depository Receipts (GDRs). [MTP OCT'24]

Answer:

- (i) Holders of GDRs participate in the economic benefits of being ordinary shareholders, though they do not have voting rights.
- (ii) GDRs are settled through CEDEL & Euro-clear international book entry systems.
- (iii) GDRs are listed on the Luxemburg stock exchange.
- (iv) Trading takes place between professional market makers on an OTC (over the counter) basis.
- (v) The instruments are freely traded.
- (vi) They are marketed globally without being confined to borders of any market or country as it can be traded in more than one currency.
- (vii) Investors earn fixed income by way of dividends which are paid in issuer currency converted into dollars by depository and paid to investors and hence exchange risk is with investor.
- (viii) As far as the case of liquidation of GDRs is concerned, an investor may get the GDR cancelled any time after a cooling period of 45 days. A non-resident holder of GDRs may ask the overseas bank (depository) to redeem (cancel) the GDRs. In that case overseas depository bank shall request the domestic custodians bank to cancel the GDR and to get the corresponding underlying shares released in favour of non-resident investor. The price of the ordinary shares of the issuing company prevailing in the Bombay Stock Exchange or the National Stock Exchange on the date of advice of redemption shall be taken as the cost of acquisition of the underlying ordinary share.

Chapter 11 : Interest Rate Risk Management

Types of Interest Rate Risk

Question 10: Explain briefly various types of interest rate risk faced by companies/ banks. [MTP OCT'24]

Answer:

Various types of Interest rate risk faced by companies/ banks are as follows:

(1) Gap Exposure: A gap or mismatch risk arises from holding assets and liabilities and off-balance sheet items with different principal amounts, maturity dates or re-pricing dates, thereby creating exposure to unexpected changes in the level of market interest rates. This exposure is more important in relation to banking business.

(2) Basis Risk: Market interest rates of various instruments seldom change by the same degree during a given period of time. The risk that the interest rate of different assets, liabilities and off-balance sheet items may change in different magnitude is termed as basis risk. For example, while assets may be benchmarked to Fixed Rate of Interest, liabilities may be benchmarked to floating rate of interest. The degree of basis risk is fairly high in respect of banks that create composite assets out of composite liabilities.

(3) Embedded Option Risk: Significant changes in market interest rates create another source of risk to banks' profitability by encouraging prepayment of cash credit/demand loans/term loans and exercise of call/put options on bonds/debentures and/or premature withdrawal of term deposits before their stated maturities.

(4) Yield Curve Risk: The movements in yield curve are rather frequent when the economy moves through business cycles. Thus, banks should evaluate the movement in yield curves and its impact on the portfolio values and income.

(5) Price Risk: Price risk occurs when assets are sold before their stated maturities. In the financial market, bond prices and yields are inversely related. The price risk is closely associated with the trading book, which is created for making profit out of short-term movements in interest rates.

Banks which have an active trading book should, therefore, formulate policies to limit the portfolio size, holding period, duration, defeasance period, stop loss limits, marking to market, etc.

(6) Reinvestment Risk: Uncertainty with regard to interest rate at which the future cash flows could be reinvested is called reinvestment risk.

Any mismatches in cash flows would expose the banks to variations in NII as the market interest rates move in different directions.

Chapter 12 : Corporate Valuation

Venture Capital Method of valuing Startups

Question 3: Explain Venture Capital Method of valuing Startups.

[MTP SEP'24]

Answer:

As the name suggests, venture capital firms have made this famous. Such investors seek a return equal to some multiple of their initial investment or will strive to achieve a specific internal rate of return based on the level of risk they perceive in the venture.

The method incorporates this understanding and uses the relevant time frame in discounting a future value attributable to the firm.

The post-money value is calculated by discounting the rate representing an investor's expected or required rate of return.

The investor seeks a return based on some multiple of their initial investment. For example, the investor may seek a return of 10x, 20x, 30x, etc., their original investment at the time of exit.

New-age startups are disruptors in their own right and a necessary tool for global innovation and progress. By their very nature, startups disrupt set processes and industries to add value. In that process, they transcend traditional indicators of success like revenues, profitability, asset size, etc. Accordingly, it is no mean feat to uncover the actual value of a startup.

While the traditional methods fall short, there is no shortage of new innovative methods used to value startups based on their value drivers. However, the valuation of a startup is much more than the application of ways – it is about understanding the story of the future trajectory and communicating that narrative using substantial numbers.

First Chicago Method of valuing Startups

Question 4: The ABC Startup has the following expected profits under different scenarios along respective probabilities:

Year	Best Case		Base Case		Worst Case	
	Revenue	Expenses	Revenue	Expenses	Revenue	Expenses
1	₹ 100,00,000	₹ 80,00,000	₹ 100,00,000	₹ 90,00,000	₹ 100,00,000	₹ 95,00,000
2	₹ 120,00,000	₹ 92,40,000	₹ 110,00,000	₹ 95,70,000	₹ 102,00,000	₹ 98,94,000
3	₹ 144,00,000	₹ 108,00,000	₹ 121,00,000	₹ 102,85,000	₹ 104,04,000	₹ 101,95,920
Probability	30%		60%		10%	

You are required to suggest the value of ABC Startup using First Chicago Method assuming that:

- (i) Applicable discounting rate is 20%.**
- (ii) Startup is located in Tax-free Zone.**
- (iii) The multiple for Terminal is 10.**
- (iv) No depreciable assets are held by the ABC Startup.**

Note: 1. Present Value Factor (PVF)

Year	1	2	3
PVF @ 20%	0.8333	0.6944	0.5787

2. Round off the calculation to whole numbers.

[MTP OCT'24]

Answer:

Valuation of Startup under different scenarios:

(i) Best Case Scenario

	Year 1	Year 2	Year 3	
Revenue	₹ 100,00,000	₹ 120,00,000	₹ 144,00,000	
Expenses	₹ 80,00,000	₹ 92,40,000	₹ 108,00,000	
Cash Flow/ Earnings	₹ 20,00,000	₹ 27,60,000	₹ 36,00,000	
Terminal Value				₹ 3,60,00,000
PVF @ 20%	0.8333	0.6944	0.5787	0.5787
PV	₹ 16,66,600	₹ 19,16,544	₹ 20,83,320	₹ 2,08,33,200
Value of Startup				₹ 2,64,99,664

(ii) Base Case Scenario

	Year 1	Year 2	Year 3	
Revenue	₹ 100,00,000	₹ 110,00,000	₹ 121,00,000	
Expenses	₹ 90,00,000	₹ 95,70,000	₹ 102,85,000	
Cash Flow/ Earnings	₹ 10,00,000	₹ 14,30,000	₹ 18,15,000	
Terminal Value				₹ 181,50,000
PVF @ 20%	0.8333	0.6944	0.5787	0.5787
PV	₹ 8,33,300	₹ 9,92,992	₹ 10,50,341	₹ 105,03,405
Value of Startup				₹ 133,80,038

(iii) Worst Case Scenario

	Year 1	Year 2	Year 3	
Revenue	₹ 100,00,000	₹ 102,00,000	₹ 104,04,000	
Expenses	₹ 95,00,000	₹ 98,94,000	₹ 101,95,920	
Cash Flow/ Earnings	₹ 5,00,000	₹ 3,06,000	₹ 2,08,080	
Terminal Value				₹ 20,80,800
PVF @ 20%	0.8333	0.6944	0.5787	0.5787
PV	₹ 4,16,650	₹ 2,12,486	₹ 1,20,416	₹ 12,04,159
Value of Startup				₹ 19,53,711

Value of ABC Startup as per First Chicago Method

$$= 0.30 \times ₹ 2,64,99,664 + 0.60 \times ₹ 133,80,038 + 0.10 \times ₹ 19,53,711$$

$$= ₹ 79,49,899 + ₹ 80,28,023 + ₹ 1,95,371$$

$$= ₹ 1,61,73,293$$

Chapter 13 : Mergers & Acquisition & Corporate Restructuring
Swap Ratio (In Line with QB Ques 26)

Question 7: ICL is proposing to take over SVL with an objective to diversify. While ICL growth rate is 18%, the SVL growth rate is 15%. Both the companies pay dividend regularly. The summarized Profit & Loss Account of both the companies are as follows:

₹ in Crores

Particulars	ICL	SVL
Net Sales	9090	3000
PBIT	5960	1440
Interest	1500	50
Provision for Tax	2880	890
PAT	1580	500
Dividends	470	304.35

	ICL		SVL	
Fixed Assets				
Land & Building (Net)	1440		380	
Plant & Machinery (Net)	1800		700	
Furniture & Fixtures (Net)	60	3300	20	1100
Current Assets		1550		1160
Less: Current Liabilities				
Creditors	460		260	
Overdrafts	70		20	
Provision for Tax	290		100	
Provision for dividends	120	940	100	480
Net Assets		3910		1780

Paid up Share Capital (₹ 10 per share)	500		250	
Reserves and Surplus	2100	2600	1320	1570
Borrowing		1310		210
Capital Employed		3910		1780

Market Price Share (₹)	175	98
Cost of Equity	25%	20%

ICL's Land & Buildings are stated at current prices. SVL's Land & Buildings are revalued three years ago. There has been an increase of 7.65 per cent per year in the value of Land & Buildings.

SVL is expected to grow @ 18 per cent each year, after merger.

ICL is interested to do justice to the shareholders of both the Companies. For the swap ratio weights are assigned to different parameters by the Board of Directors as follows:

Net Worth Per Share*	25%
EPS (Earning per share)	30%
Share price as per Dividend Growth Model	20%
Market Price per share	25%

*** After required adjustment.**

You are required to suggest the swap ratio based on above weights and total number of shares.

Note: Round off calculations upto two decimal points.

[MTP OCT'24]

Answer:

Total Assets (Fixed assets + Current Assets) (₹ Crores)	2260
Less: Liabilities (Current Liabilities + Borrowings) (₹ Crores)	690
Net Assets Value (₹ Crores)	1570
Current Value of Land after growing for three years @ 30% = 380 x 1.2475 (₹ Crores)	474.05*
Less: Book Value (₹ Crores)	380.00
Increase in the Value of land (₹ Crores)	94.05
Adjusted NAV (1570 + 94.05) (₹ Crores)	1664.05
No. Shares (Crores)	25
Net Worth Per Share	₹ 66.56

* Alternatively, this value can also be computed as ₹ 475 Crores.

(ii) Computation of Net Worth Per Share of ICL

Share Capital + Reserves and Surplus = ₹ 2600 Crore

Total Number of Shares = 50 Crore

Net Worth Per Share = ₹ 2600 Crore / 50 Crore = ₹ 52.00

(iii) Earning Per Share (EPS)

	ICL	SVL
PAT	₹ 1580 Crore	₹ 500 Crore
No. of Shares	50 Crore	25 Crore
EPS	₹ 31.60	₹ 20.00

(iv) Share price as per Dividend Growth Model

	ICL	SVL
Total Dividend	₹ 470 Crore	₹ 304.35 Crore
No. of Shares	50 Crore	25 Crore
Dividend Per Share (D0)	₹ 9.40	₹ 12.17
Expected Dividend (D1)	₹ 9.40 (1 + 0.18) = ₹ 11.09	₹ 12.17 (1 + 0.15) = ₹ 14.00
Value of Per Share as Growth Model	$\frac{11.09}{0.25-0.18} = ₹ 158.43$	$\frac{14.00}{0.20-0.15} = ₹ 280$

Calculation of Swap Ratio

Net Worth Per Share	1 : 1.28 i.e.	$1.28 \times 25\%$	0.32
EPS	1 : 0.63 i.e.	$0.63 \times 30\%$	0.19
Share price as per Dividend Growth Model	1 : 1.77 i.e.	$1.77 \times 20\%$	0.35
Market Price	1 : 0.56 i.e.	$0.56 \times 25\%$	0.14

Swap ratio is for every one share of SVL, to issue 1 share of ICL.
Hence, total no. of shares to be issued 25 crores.

Chapter 14 : Startup Finance

Unicorn

Question 6: What do you mean by the term Unicorn? State the features a Start-up should possess to be referred as a Unicorn? [MTP MAR'24]

Answer:

A Unicorn is a privately held start-up company which has achieved a valuation US\$ 1 billion. This term was coined by venture capitalist Aileen Lee, first time in 2013. Unicorn, a mythical animal represents the statistical rarity of successful ventures.

A start-up is referred as a Unicorn if it has following features:

- (i) A privately held start-up.
- (ii) Valuation of start-up reaches US\$ 1 Billion.
- (iii) Emphasis is on the rarity of success of such start-up.
- (iv) Other common features are new ideas, disruptive innovation, consumer focus, high on technology etc.

However, it is important to note that in case the valuation of any start-up slips below US\$ 1 billion it can lose its status of 'Unicorn'. Hence a start-up may be Unicorn at one point of time and may not be at another point of time.

Government initiatives to create sustainable environment for start-up in India

Question 7: What steps Government has taken to create sustainable environment for start-up in India

Answer:

Reasons Why india became sustainable environment for startups

Government Initiatives and Programs:

Startup India and StandUp India Programs (2016):

- Launched to boost awareness and entrepreneurial mindset.
- Creation of a SIDBI-run Electronic Development Fund (EDF), with the Indian Government as a Limited Partner (LP) for the first time.
- Provided easy finance options like the Mudra Scheme.
- Offered tax benefits, including a 100% tax holiday under section 80-IAC and exemption from angel taxation.

Startup India Seed Fund Scheme (SISFS) (2021):

- Created by DPIIT with an outlay of INR 945 Crore.
- Provides financial assistance for Proof of Concept, prototype development, product trials, market entry, and commercialization.
- Supports approximately 3,600 entrepreneurs through 300 incubators over four years.
- Start-ups recognized by DPIIT, not more than 2 years old, can apply.
- Provides seed funding up to INR 50 Lakh.
- Priority sectors include social impact, waste and water management, financial inclusion, education, agriculture, biotechnology, healthcare, energy, mobility, defense, space, railways, oil and gas, and textiles

Factors Other than Government initiatives to create sustainable environment for start-up in India

Question 8: Apart from the support from Government, there are quite a few other reasons why India became a sustainable environment for start-up to thrive in. What are the other reasons? [MAY'24]

Answer:

Apart from Government Initiatives and Programs like

Startup India and StandUp India Programs (2016)

Startup India Seed Fund Scheme (SISFS) (2021)

The Other Reasons for a Sustainable Startup Environment in India:

1. Pool of Talent:

- There are millions of graduates from colleges and B-schools every year. Many of these students use their knowledge and skills to begin their own ventures rather attracting to big companies ,and that has contributed to the startup growth in India.

2. Cost-Effective Workforce:

- Young country with over 10 million people joining workforce each year and is cost effective
- Lower cost of setting up and running businesses compared to other countries.

3. Increasing Use of the Internet:

- Significant increase in internet usage due to affordable telecom services.
- India has the second-largest internet user base, benefiting startups.

4. Technology:

- Developments in software and hardware systems have streamlined business processes.
- Growing focus on artificial intelligence and blockchain technologies.

5. Variety of Funding Options:

- Traditional funding methods complemented by angel investors, venture capitalists, and seed funding.
- Easing of Foreign Direct Investment norms, allowing 100% automatic route in most sectors.