

Question Paper

Security Analysis - I (MSF2D1): April 2008

Section A : Basic Concepts (30 Marks)

- This section consists of questions with serial number 1 - 30.
- Answer all questions.
- Each question carries one mark.
- Maximum time for answering Section A is 30 Minutes.

1. Which of the following statements is **true** for Preferred Habitat Theory?

[<Answer>](#)

- (a) Investors will act only on the basis of expected returns on bonds of different maturities
- (b) According to this theory the investor are not indifferent to risk and they charge higher rates than the expected future rates, if the maturity of the instrument increases
- (c) According to this theory it is not necessary that the liquidity premium should increase at a uniform rate with maturity
- (d) This theory is widely used to predict interest rates in different sectors of the economy
- (e) This theory considers price risk and not the reinvestment risk.

2. The implied price of a non-callable bond is Rs.134.00 and the observed price of a callable bond is Rs.125.21. The option adjusted duration is 1.96. If the delta of the call option is 0.478 the duration of the non-callable bond is

[<Answer>](#)

- (a) 2.63 years
- (b) 3.51 years
- (c) 4.22 years
- (d) 5.10 years
- (e) 6.74 years.

3. Which of the following statements is **false** for support and resistance lines?

[<Answer>](#)

- (a) Support and resistance lines should be drawn using judgment, and clues from the past price behavior
- (b) Penetration of a support and resistance line, also confirmed by an underlying price pattern, is a fairly sure indication of a strong ensuing move in the same direction
- (c) The lower the volume accompanying the confirmation of a support or resistance level, the more its significance
- (d) The speed and extent of the previous move determines the significance of support and resistance level
- (e) Support and resistance lines are only approximation of the levels, prices that may be expected to obey.

4. The implied growth rate in dividends is 7.5% and it has paid a dividend of Rs.4.65 for the current year. If the stock is currently available at a price of Rs.82.50, the required rate of return on the stock is

[<Answer>](#)

- (a) 13.56%
- (b) 14.28%
- (c) 15.17%
- (d) 16.05%
- (e) 17.23%.

5. Which of the following is **not** a criterion for the issuers, for availing credit rating?

[<Answer>](#)

- (a) A company with highly rated instruments has the opportunity to reduce the cost of borrowing by quoting less interest rates
- (b) Rating encourages the companies to disclose their accounting system, financial reporting and management pattern
- (c) Smaller and not so well known companies can access the market
- (d) By indentifying the risks, rating helps in channelizing savings into productive investment
- (e) Companies with high rating can approach a wider section of investments for resource mobilization.

6. In structural analysis, which of the following is **not** considered as an entry barrier?

[<Answer>](#)

- (a) Product differentiation
- (b) Strategic interrelationships
- (c) Capital requirements
- (d) Switching costs
- (e) Government policy.

7. Consider the following information:

[<Answer>](#)

Price of the bond	Rs. 1,000
Coupon rate	7.5%
Yield to maturity	7.5%

If the maturity of the bond is 7 years, the interest rate elasticity of the bond is

- (a) 0.1674
- (b) 0.2514
- (c) 0.3970
- (d) 0.4111

(e) 0.5012.

8. Which of the following statements is **false** for warrant premium?

[<Answer>](#)

- (a) The longer the period of maturity, the greater will be the premium of warrant
- (b) As the price volatility of the underlying share increases, the premium of the warrant also increases
- (c) As the market price of the share increases, the premium for warrant also increases
- (d) The greater the leverage on the warrant, the greater the premium it will attract from the investors
- (e) As the holder of the warrants do not receive any dividend, declaration of dividends on the share makes them skeptical about the prices.

9. A 4-year bond and a 3-year bond are currently yielding 6.5% and 4.5% respectively. The implied yield for 1 year bond starting 3 years from now is

[<Answer>](#)

- (a) 12.73%
- (b) 13.48%
- (c) 14.67%
- (d) 16.08%
- (e) 17.91%.

10. Which of the following statements is **true** in case of wedding warrants?

[<Answer>](#)

- (a) These warrants confer a right to the investor to sell the warrant back to the company at fixed price before the expiry of a fixed period
- (b) These warrants are attached to the host debentures and can be exercised only if the host debenture is surrendered
- (c) These warrants are issued separately and not as a part of a bond or a debenture issue
- (d) The holder has the option of converting the warrant into debt or equity or some other assets of the issuer
- (e) These warrants are issued with most debentures like convertible or non-convertible or equity, and are immediately detachable.

11. Which of the following is a key factor under management evaluation for credit analysis?

[<Answer>](#)

- (a) Crisis management
- (b) Industry risk
- (c) Capital adequacy
- (d) Interest and tax sensitivity
- (e) Adequacy of cash flows.

12. Which of the following statements is/are **false**?

[<Answer>](#)

- I. For a characteristic line, the Y-axis represents the returns for a particular security and the X-axis represents the returns for the market index.
- II. In the ex-post SML, average historical rate of return for securities are plotted against their beta for a particular time period.
- III. The slope of the SML is the beta for the particular security.

- (a) Only (I) above
- (b) Only (III) above
- (c) Both (I) and (II) above
- (d) Both (II) and (III) above
- (e) All (I), (II) and (III) above

13. Which of the following statements is/are **true** of “market extraction method” to derive the capitalization rate of real assets?

[<Answer>](#)

- I. In this method, the rates on equity as well as debt financing rates are weighted according to their proportions to calculate the capitalization rate.
- II. In this method, net operating income is divided by sales price to get the capitalization rate.
- III. In this method, the capitalization rate is the sum of the return required on an asset for being non-liquid and the risk premium.

- (a) Only (I) above
- (b) Only (II) above
- (c) Only (III) above
- (d) Both (I) and (II) above
- (e) Both (II) and (III) above.

14. The average daily price change in coffee futures contract is \$4.87 per ounce and the standard deviation of the price changes is \$0.57. If the size of the contract is 1000 ounce, the initial margin required is

[<Answer>](#)

- (a) \$5293
- (b) \$6580
- (c) \$7254
- (d) \$8691
- (e) \$9875.

15. A convertible bond with a face value of Rs.1,000 has been issued at Rs.1,250 with a coupon rate of 9.5%. The conversion rate is 12 shares per bond. The current market price of the bond is Rs.1,520 and that of stock is Rs.95. The premium over conversion value is

[<Answer>](#)

- (a) 15.24%
- (b) 27.81%

- (c) 33.33%
- (d) 41.02%
- (e) 51.61%.

16. Which of the following statements is **true** for Perpetual FRNs?

[<Answer>](#)

- (a) These are called rolling rate FRNs
- (b) These FRNs consist of maximum and minimum coupons
- (c) Under this the FRNs are pegged to an interest rate cap
- (d) These are also called irredeemable or unrated FRNs and are akin to form of capital
- (e) Under this the coupon rate increases when the LIBOR rate decreases and vice versa.

17. Which of the following statements is/are **true** for Runaway gaps?

[<Answer>](#)

- I. Runaway gaps represent gaps occurring before a trend ends, or gaps that precede the last leg of a bullish or bearish trend.
- II. A runaway gap is created when price breaks out of a price pattern, and such breakouts are more valid than those occurring without a gap.
- III. Runaway gaps occur when prices are on a rapid uptrend or downtrend.
- (a) Only (II) above
- (b) Only (III) above
- (c) Both (I) and (II) above
- (d) Both (I) and (III) above
- (e) All (I), (II) and (III) above.

18. Consider the following information:

[<Answer>](#)

Risk free rate	6.5%
Rate for non-liquidity	3%
Return on investment	4.5%
Risk premium	2.5%

If the net operating income is Rs 45,000, the market value of the property is approximately

- (a) Rs. 2.73 lakh
- (b) Rs. 3.15 lakh
- (c) Rs. 4.64 lakh
- (d) Rs. 5.60 lakh
- (e) Rs. 6.43 lakh.

19. Which of the following statements is/are **false**?

[<Answer>](#)

- I. The principal method of interpreting stochastics for buy and sell signal is through divergence analysis.
- II. Confidence index is a ratio of high grade bond yields to low grade bond yields.
- III. Rate of Chance (ROC) index helps to gauge breadth of the market.
- (a) Only (II) above
- (b) Only (III) above
- (c) Both (I) and (II) above
- (d) Both (I) and (III) above
- (e) All (I), (II) and (III) above.

20. Which of the following statements is/are **false** with respect to residual income method for calculating Economic Value Added (EVA)?

[<Answer>](#)

- I. In this method, WACC is multiplied by the net assets to arrive at the capital charge.
- II. It serves as a measure of a firm's external performance.
- III. Companies with a high value of EVA performed well above the market.
- (a) Only (II) above
- (b) Only (III) above
- (c) Both (I) and (II) above
- (d) Both (I) and (III) above
- (e) All (I), (II) and (III) above.

21. The market price per share of Daniel Ltd. is Rs. 45.50. If the dividend expected is Rs. 8.50, the duration of the stock is

[<Answer>](#)

- (a) 2.34 years
- (b) 3.21 years
- (c) 4.78 years
- (d) 5.35 years
- (e) 6.08 years.

22. Consider the following data of DSP Merrill Lynch Mutual Fund (Growth plan):

[<Answer>](#)

	Rs. in crore
Value of investments	2578.56
Receivables	178.97
Accrued income	440.61
Other current assets	423.23
Liabilities	389.11
Accrued expenses	87.71

If the number of outstanding units is 155 crore and sales charge is 2.5% on the NAV, the public offering price is

- (a) Rs. 18.73
- (b) Rs. 20.81
- (c) Rs. 33.45
- (d) Rs. 40.50
- (e) Rs. 52.21.

23. Which of the following statements is/are **false** under Efficient Market Hypothesis (EMH)?

[<Answer>](#)

- I. According to EMH, successive absolute short run price changes are independent.
- II. EMH show that how quickly and accurately does relevant information have its effect on the asset prices.
- III. Auto correlation and run test are used for testing the semi-strong form of efficient market hypothesis.

- (a) Only (II) above
- (b) Only (III) above
- (c) Both (I) and (II) above
- (d) Both (I) and (III) above
- (e) All (I), (II) and (III) above.

24. Which of the following is **not** an assumption made under technical analysis?

[<Answer>](#)

- (a) Market value is determined solely by the interaction of supply and demand
- (b) Ignoring minor fluctuations in the market, stock prices tend to move in trends which persists for an appreciable period of time
- (c) Changes in trend are caused by shifts in supply and demand
- (d) Supply and demand are governed only by rational factors
- (e) Some chart patterns tend to repeat themselves.

25. Which of the following statements is **false** under forward contracts?

[<Answer>](#)

- (a) In this, terms are structured to suit both the contracting parties
- (b) It is an over the counter product
- (c) No organization guarantees the performance of the counterparty
- (d) No compulsion on traders to deposit initial margin irrespective of their trading positions
- (e) Marking to market is done at the end of every trading day.

26. In which of the following stage of an industry life cycle, industries are improving their product and perhaps lowering their prices?

[<Answer>](#)

- (a) Expansion stage
- (b) Pioneering stage
- (c) Maturity stage
- (d) Decline stage
- (e) Stabilization stage.

27. Which of the following statements is/are **false** with respect to utility theory?

[<Answer>](#)

- I. Expected utility is an increasing function of expected return.
- II. Expected utility is an increasing function of the standard deviation of returns.
- III. In utility theory, total utility is an increasing function of wealth whereas marginal utility is a decreasing function of wealth.

- (a) Only (II) above
- (b) Only (III) above
- (c) Both (I) and (II) above
- (d) Both (I) and (III) above
- (e) All (I), (II) and (III) above.

28. Which of the following statements is **false** under Key Rate Duration (KRD)?

[<Answer>](#)

- (a) KRD can identify the price sensitivity of an option embedded bond to each segment of the spot yield curve
- (b) KRD can capture the influence of multiple market factors on the yield curve movement
- (c) The sum of KRDs will be equal to the effective duration
- (d) The major drawback of KRD is that it is calculated based on the assumption of parallel shifts in the yield curve
- (e) KRD is not a single measure but a vector of numbers defining the priced sensitivity of a security over the entire domain of possible movements of the yield curve.

29. Maruguppa Ltd. has a stable growth rate of 6.5%. It pays out 45% of its earnings as dividends. The return on equity of the company at the beginning of the year is 12%. If the required rate of return is 9.5%, price to book value ratio according to Gordon Model is

[<Answer>](#)

- (a) 1.917
- (b) 2.110
- (c) 3.157
- (d) 4.568
- (e) 5.997.

30. The stock of Mezzanine Ltd. has the following parameters:

[<Answer>](#)

Beta = 1.11
Expected return = 11%

The risk free rate of return is 5.5% and the market return is 9%. The ex-ante alpha (α) of Mezzanine Ltd. is

- (a) 1.62%
- (b) 2.64%
- (c) 3.05%
- (d) 4.61%
- (e) 5.18%.

END OF SECTION A

Section B : Problems (50 Marks)

- This section consists of questions with serial number 1 – 5 .
- Answer all questions.
- Marks are indicated against each question.
- Detailed workings should form part of your answer.
- Do not spend more than 110 - 120 minutes on Section B.

1. Metal Synthetics Ltd. has made a public issue of convertible debentures of face value of Rs.100 with a coupon of 10.5% p.a. The debenture has two parts – A and B. Part A, 50% of the face value will be converted into one equity share after one year from the date of allotment and Part B, the remaining 50% of the face value, will have a warrant attached to it.

[<Answer>](#)

The following options are available to the investor:

- i. Exchange Part B and warrant for one equity share at the end of the 3rd year.
- ii. Retain Part B and let the warrant lapse. In that case, Part B will be redeemed at the end of the 5th year.

The current EPS of the company is Rs.7.5 and its dividend payout ratio is 35%. The face value of equity share of the company is Rs.10. The company's earnings were growing at a rate of 15% p.a. for the past 5 years but the growth rate is expected to be 10% p.a. for the next 5 years and stabilize at 9% p.a. thereafter. Dividend payout ratio remains constant. The required rate of return of the equity shareholders is 13.5%.

The required rate of return on convertible bond is 18% and the investor wants to sell all the equity holdings at the end of the 5th year. At the end of 5th year the equity shares are traded at their intrinsic value.

You are **required** to determine whether it is desirable to invest in the debentures of the company or not and if yes, which of the options of the bond should be chosen.

(11 marks)

2. Mr. Mangal Pandey is holding two bonds Alpha and Beta which pay an annual coupon of 5.5% and 7.5% and their terms to maturity are 4 years and 5 years, respectively. The face value and maturity value of the bonds is Rs.100. Spot rates prevailing in the market as indicated by the yield curve are:

[<Answer>](#)

Maturity (Years)	Spot rates
1	4.50%
2	5.25%
3	5.71%
4	6.25%
5	6.50%

You are **required** to calculate the expected change in the prices of bonds A and B using the convexity concept, for a 0.65% change in yield to maturity.

(12 marks)

3. Data for 12-days trend of securities traded on NSE is given below.

[<Answer>](#)

Days	Advances	Declines	Total number of issues traded
1	1238	140	1392
2	968	393	1398
3	830	530	1389
4	1235	165	1410
5	1191	201	1407
6	683	699	1409
7	896	380	1314
8	90	1307	1410
9	362	1013	1404
10	435	918	1403
11	738	623	1397
12	1154	212	1404

You are **required** to calculate:

- a. Short-period A-D line
- b. Long period A-D line
- c. Explain in what way the two lines provide different information?

(2 marks)

(5 marks)

(3 marks)

4. Stanrose Metals Ltd. (SML) is engaged in manufacturing of steel plates. Presently the EPS of the company is Rs.7.24. The company's dividend payout ratio is 55% and ROE is 12% and both of these are expected to be the same in the near future. The beta of the company is 1.15. The treasury bill rate is 6.71% and the average return

[<Answer>](#)

from the market is 11.40%.

You are **required** to

- a. Calculate the intrinsic value of the shares of SML using Dividend Discount Model (DDM). (3 marks)
- b. Calculate the intrinsic value of shares of SML using DDM taking into consideration that the company acquires another company and as a result dividends grow at 15% for the next three years and return to the constant historical growth rate from 4th year. (5 marks)

5. The following information is given by Datamatics Ltd. [<Answer>](#)

Stock	Expected Return (%)	s_i (%)	$r_{i,m}$	Systematic Risk (%) 2
HLL	?	6	?	11
HCL	7	?	1.21	4
IBM	12	?	1.05	15

You are **required** to fill the blanks, considering the variance on the market return to be $10(\%)^2$.

(9 marks)

END OF SECTION B

Section C : Applied Theory (20 Marks)

- This section consists of questions with serial number 6 - 7 .
- Answer all questions.
- Marks are indicated against each question.
- Do not spend more than 25 - 30 minutes on Section C.

6. The rating process of debt instruments commences at the issuers request. Based on the tenure of the instruments, the rating agency gathers the requisite data. In this context, discuss the key parameters taken into account while rating a debt instrument. [<Answer>](#)

(10 marks)

7. The significance of industry analysis can be established by considering the performance of other industries in similar fashion. Discuss the key characteristics in an Industry Analysis. [<Answer>](#)

(10 marks)

END OF SECTION C

END OF QUESTION PAPER

Suggested Answers Security Analysis - I (MSF2D1): April 2008

Section A : Basic Concepts

Answer

Reason

- a According to this theory it is not necessary that the liquidity premium should increase at a uniform rate with maturity. Hence option (c) is the answer. [< TOP >](#)
- b Let the duration of the non callable bond be x. [< TOP >](#)
Option adjusted duration
Therefore, the duration of the non callable bond is 3.51 years.
- c The higher the volume accompanying the confirmation of a support or resistance level, the more its significance. Hence option (c) is the answer. [< TOP >](#)
- a Let the required rate of return be x. [< TOP >](#)

- $P_0 = \frac{82.49}{1 + 0.1356} = \frac{82.49}{1.1356} = 72.69$
 $x = 13.56\%$.
5. d By indentifying the risks, rating helps in channelizing savings into productive investment is a criterion for regulatory authority for availing credit rating. Hence option (d) is the answer. [< TOP >](#)
6. b Strategic relationships is a major source of exit barrier. Hence option (b) is the answer. [< TOP >](#)
7. c Bond price elasticity
 $IE = D_{it} \times \frac{D_{it}}{P_{it}}$
 $D_{it} = PVIFA_{7.5\%, 7} \times (1.075)$
 $= 5.2966 \times 1.075 = 5.69$ years
 $IE = 5.69 \times \frac{5.69}{72.69} = 0.3970$
8. c The market price of the share warrant and the premium has an inverse relationship. As the market price of the share increases, the premium of the warrant decreases. Hence option (c) is the answer. [< TOP >](#)
9. a $1 + f_4 = (1 + r_4)^4 / (1 + r_3)^3$
 $f_4 = (1.065)^4 / (1.045)^3 - 1$
 $= 12.73\%$.
10. b These warrants are attached to the host debentures and can be exercised only if the host debenture is surrendered. Hence option (b) is the answer. [< TOP >](#)
11. a Crisis management is a key factor under management evaluation for credit analysis. Hence option (a) is the answer. [< TOP >](#)
12. b The slope of the characteristic line is the beta for the particular security involved. Hence option (b) is the answer. [< TOP >](#)
13. b In this method, net operating income is divided by sales price to get the capitalization rate. Hence option (b) is the answer. [< TOP >](#)
14. b The margin depends on the price volatility of the underlying. Exchanges generally set this margin equal to
 $\text{Margin} = \frac{\mu + 3\sigma}{P}$
 Where μ is the average daily absolute change in the value of the contract and σ is the standard deviation of these changes measured over a period of time.
 Substituting the given values, we get
 $\text{Margin} = (4.87 + 3 \times 0.57) \times 1000 = \6580
 Hence the correct answer is (b). [< TOP >](#)
15. c Conversion rate is 12 shares per bond
 Market price per share is Rs.95
 Conversion value = Rs.(95 $\times$ 12) = Rs.1140
 Market price of the bond = Rs.1520
 $\therefore$ Premium over conversion value = $\frac{1520 - 1140}{1140} = 33.33\%$.
 Therefore, Option (c) is the correct answer. [< TOP >](#)
16. d The perpetual FRNs are also called irredeemable or unrated FRNs and are akin to form of capital. Hence option (d) is the answer. [< TOP >](#)
17. b Runaway gaps occur when prices are on a rapid uptrend or downtrend. They generally occur almost halfway through a trend, and are also called measuring gaps. Hence option (b) is the answer. [< TOP >](#)
18. a Capitalization rate = Risk-free rate + Rate for Non-liquidity + Return on investment + risk premium
 $= 6.5\% + 3\% + 4.5\% + 2.5\% = 16.5\%$
 The capitalized value of NOI is, therefore, given by
 $MV = \frac{NOI}{0.165} = \frac{330}{0.165} = Rs.2.73 \text{ lakh}$.
19. b ROC index cannot be used to gauge the breadth of the market, which is measured from an arbitrary point that can provide both negative and positive values. Hence option (B) is the answer. [< TOP >](#)
20. a Market value added (MVA) serves as a measure of a firm's external performance. Hence option (a) is the answer. [< TOP >](#)
21. d Duration = 1/dividend yield
 $= \frac{1}{(8.5/45.50)}$
 $= 5.35$ years. [< TOP >](#)
22. b Public offering price =
 $\frac{1000000}{1.05} = 952381$
 $= 952381 + 100000 = Rs.20.81$ [< TOP >](#)
23. b Auto correlation and run test are for testing the weak form of efficient market hypothesis. Hence option (b) is the answer. [< TOP >](#)

24. D Supply and demand are governed by numerous factors, both rational and irrational. Therefore, option (d) is the correct answer. [< TOP >](#)
25. e In futures contract marking to market is done at the end of every day. Hence option (e) is the answer. [< TOP >](#)
26. a At the expansion stage of the cycle, industries are improving their product and perhaps lowering their prices. Hence option (a) is the answer. [< TOP >](#)
27. a Expected utility is an increasing function of expected return and a decreasing function of the standard deviation of return. Hence option (a) is the answer. [< TOP >](#)
28. d The major drawback of effective rate duration is that it is calculated based on the assumption of parallel shifts in the yield curve. Thus the statement is a drawback of effective rate of duration and not KRD. Hence option (d) is the answer. [< TOP >](#)
29. a $P/BV \text{ ratio} = [ROE \times \text{Pay-out ratio} \times (1+g_n)]/(r - g_n)$
 $= [0.12 \times 0.45 \times (1.065)]/(0.095 - 0.065)$
 $= 1.917$ [< TOP >](#)
30. a $R(R)_i = R_f + \beta_i (R_m - R_f)$ [< TOP >](#)
 $R(R)_i = 5.5 + 1.11 (9 - 5.5) = 9.39\%$
 $\alpha = E(R_i) - R(R)_i = 11 - 9.39 = 1.62\%$

Section B : Problems

1. Intrinsic value of equity at the end of 5th year:

$$= \quad = \quad = \text{Rs.}102.44$$

[< TOP](#)
[>](#)

OPTION I : Exchange part B and warrant at the end of 3rd year.

Year	Cash flow	Total flow Rs.
1.	Interest of $100 \times 0.105 = \text{Rs.}10.5$	10.50
2.	Interest = $50 \times 0.105 = \text{Rs.}5.25$ Dividend = $7.5 \times 0.35 \times 1.1^2 = \text{Rs.}3.18$	8.43
3.	Interest = $50 \times 0.105 = \text{Rs.}5.25$ Dividend = $7.5 \times 0.35 \times 1.1^3 = \text{Rs.}3.49$	8.74
4.	Dividend = $2 [7.5 \times 0.35 \times 1.1^4] = 7.69$	7.69
5.	Dividend = $2 [7.5 \times 0.35 \times 1.1^5] = 8.46$ Sale = $2 \times 102.44 = \text{Rs.}204.88$	213.34

Present value of the total cash flow =

$$= \text{Rs.}117.49$$

OPTION II: Retain Part B and let the warrant lapse

Year		
1.	Interest = 10.5	10.5
2.	Interest of Rs.5.25 + Dividend of Rs.3.18	8.43
3.	Interest of Rs.5.25 + Dividend of Rs.3.49	8.74
4.	Interest of Rs.5.25 + Dividend of Rs.3.84	9.09
5.	Interest of Rs.5.25 + Dividend of Rs.4.23 + Redemption of Rs. 50 + Sale of share Rs.102.44	161.92

$$= \text{Rs.}95.74$$

As the intrinsic value of Bond I in Option I is more than FV of Rs.100, investment should be made in the bond and exchange part B and warrant at the end of third year.

2.

a. $P =$

$$P = \text{Rs.}97.67$$

YTM of the bond A

$$97.67 =$$

$$k = 6.19\%$$

Hence YTM is approximately 6.19%.

Duration of Bond A

Year	CF _t	PV @ 6.19%	PV (CF)	t ² + t	(4) (5)
(1)	(2)	(3)	(4)	(5)	(6)
1	5.5	0.9417	5.18	2	10.36
2	5.5	0.8868	4.88	6	29.28
3	5.5	0.8351	4.59	12	55.08
4	105.5	0.7864	82.97	20	1659.4
Total			97.62		1754.12

$$\text{Convexity} =$$

$$= 15.94$$

$$\text{Price change due to convexity} = \frac{1}{2} \times \text{Price} \times \text{Convexity} \times (\text{Change in Yield})^2$$

Therefore Price change for 0.65% change in yield

$$= \frac{1}{2} \times 97.62 \times 15.94 \times (0.0065)^2$$

$$= 3.29\%$$

Price of the bond B

$$P =$$

$$= 105.00$$

Yield to maturity of the bond B

$$105 =$$

$$K = 6.3\%$$

Year	CF _t	PV @ 6.3%	PV (CF)	t ² + t	(4) (5)
(1)	(2)	(3)	(4)	(5)	(6)
1	7.5	0.9407	7.06	2	14.12
2	7.5	0.8850	6.64	6	39.84
3	7.5	0.8325	6.24	12	74.88
4	7.5	0.7832	5.87	20	117.40
5	107.5	0.7368	79.21	30	2376.30
Total			105.02		2622.54

$$\text{Convexity} =$$

$$= 22.10$$

$$\text{Price change due to convexity} = \frac{1}{2} \times \text{Price} \times \text{Convexity} \times (\text{Change in Yield})^2$$

Therefore Price change for 0.65% change in yield

$$= \frac{1}{2} \times 105 \times 22.10 \times (0.0065)^2$$

$$= 4.90\%$$

3. a. Short-period A-D line:

For short-period observations A-D lines do not account for unchanged stocks:

Day	Issues traded	Advances (A)	Declines (D)	Net (A-D)	Cumulative (A-D)
1	1392	1238	140	1098	1098
2	1398	968	393	575	1673
3	1389	830	530	300	1973
4	1410	1235	165	1070	3043
5	1407	1191	201	990	4033
6	1409	683	699	-16	4017
7	1314	896	380	516	4533
8	1410	90	1307	-1217	3316
9	1404	362	1013	-651	2665
10	1403	435	918	-483	2182
11	1397	738	623	115	2297
12	1404	1154	212	942	3239

b. Long- period A-D line:

For long period observations, the A-D line is drawn after considering those stocks also whose price remain unaltered. The A-D line is drawn by accumulating the value of A/U-D/U.

Days	Issues traded (1)	Advances (2)	Declines (3)	Unchanged (4)	(2)/(4) x 100 (5)	(3)/(4) x 100 (6)	(5)-(6) (7)	(8)	Cumulative (A – D) (9)
1	1392	1238	140	14	8842.86	1000.00	7842.86	88.56	88.56
2	1398	968	393	37	2616.22	1062.16	1554.06	39.42	127.98
3	1389	830	530	29	2862.07	1827.59	1034.48	32.16	160.14
4	1410	1235	165	10	12350.00	1650.00	10700.00	103.44	263.58
5	1407	1191	201	15	7940.00	1340.00	6600.00	81.24	344.82
6	1409	683	699	27	2529.63	2588.89	-59.26	-7.69	337.13
7	1314	896	380	38	2357.89	1000.00	1357.89	36.85	373.98
8	1410	90	1307	13	692.31	10053.85	-9361.54	-96.76	277.22
9	1404	362	1013	29	1248.28	3493.10	-2244.82	-47.38	229.84
10	1403	435	918	50	870.00	1836.00	-966.00	-31.08	198.76
11	1397	738	623	36	2050.00	1730.56	319.44	17.87	216.63
12	1404	1154	212	38	3036.84	557.89	2478.95	49.79	266.42

c. Both the lines are used for analysis of the extent of a trend. The major differences are

- As the name suggests, the long period A-D line indicates the extent of a trend for the breadth of the market over long period.
- Long-period A-D line includes the issues whose prices remain unchanged. This provides additional information on the market following a certain trend and can also indicate in advance a trend reversal.

4. Required rate of return for SML $= R_f + \beta_i (R_m - R_f)$

$$= 6.71 + 1.15 (11.40 - 6.71)$$

$$= 12.10\%$$

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a. $V_0 =$

$$g = \text{RoE} (1 - d) = 0.12 (1 - 0.55)$$

(where **d** is the dividend payout ratio)

$$= 5.4\%$$

$$D_0 = 7.24 \times 0.55 = 3.98$$

$$V_0 = \text{Rs.62.61}$$

b. $D_0 = 3.98$

Year	Div	PV@12.10%	PV(Div)
1	$3.98 \times 1.15 = 4.58$	0.8921	4.09
2	$4.58 \times 1.15 = 5.27$	0.7958	4.19
3	$5.27 \times 1.15 = 6.06$	0.7099	4.30
			12.58

$$P_3 = 95.33$$

$$\text{Present value of } P_3 = 95.33 \times \text{PVIF}_{12.1\%, 3}$$

$$= 67.67$$

$$\text{Intrinsic value} = 67.67 + 12.58 = \text{Rs.80.25.}$$

5. According to the CAPM,

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

$$R_{HCL} = R_f + 0.63 (R_m - R_f) \dots\dots\dots (1)$$

$$R_{IBM} = R_f + 1.22 (R_m - R_f) \dots\dots\dots (2)$$

(2) – (1) will give

$$12 - 7 = (1.22 - 0.63) (R_m - R_f)$$

$$(R_m - R_f) = 8.47\%$$

Substituting in (1),

$$7 = R_f + 0.63 \times 8.47$$

$$R_f = 1.66\%$$

$$R_{HLL} = 1.66 + 1.05 (8.47) = 10.55\%$$

Again Systematic risk can be expressed as

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Stock	Expected Return (%)	s_i (%)	$r_{i,m}$	Systematic Risk (%) ²
HLL	10.55	6	0.55	11
HCL	7	1.65	1.21	4

IBM	12	3.69	1.05	15
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Section C: Applied Theory

6. The key parameters taken into account while rating a debt instruments are as follows:

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Industry evaluation: This involves an evaluation of the following

- General profile of the industry, major competitors, extent of competition, growth potential and trend of both domestic and international development
- Demand and supply position of the product, existing installed ad licensed capacities , capacities in the pipeline
- Position of import and export , technological developments, price trends, availability, source, quality and prices of major inputs
- Government policies and regulations affecting the industry and other major problems and constraints

Unit evaluation: this company level evaluation involves an assessment of the following:

- Position of the unit in the industry, market share, competitive edge, major strengths and weaknesses
- Product range and quality, market segmentation and seasonality of the market, marketing strategies, channels and network
- Future program, goals and targets. Product range and portfolio diversification, need scope and prospects of diversification and expansion
- Group/associate campy performance support and synergy

Technical evaluation: the technical competence of the company is assessed by focusing on the following:

- Level of technology , operative efficiency of the plat, vintage of the plat and level of maintenance
- Need and plan for modernization and debottlenecking
- Competence and support of technical collaborators , terms of collaboration , royalty and buy-back
- In-house expertise and expertise for absorption of technology
- Efforts for skill development and productivity improvement
- Locational advantage and disadvantages, ad infrastructural facilities
- Yield analysis, extent of rejection at different stages including quality complaints by the customers
- Protection against hazards and other natural calamities

Financial evaluation: The financial strength of the client is assessed by examining the following aspects:

- Accounting policies, extent of disclosures, inventory valuation, depreciation and other provisions, revaluation of assets , management of assets and liabilities , asset quality, contingent and off balance sheet liabilities
- Auditor's report and Director's report
- Capitalization trends and policies
- Cash flow trends and potential, future projections and underlying assumptions in respect of profitability and liquidity management
- Return on capital employed, interest coverage, debt-service coverage and fixed assets coverage

- Practice of debt servicing, requirement of future debt servicing, major fund commitments and overall liquidity
- Financial flexibility, unutilized borrowing potential, standing in the capital market , capability to raise resources and to absorb debts
- Working capital management, control over receivables and inventory
- Budgeting and cost control system
- Sensitivity to changes in interest rates, tax rates and exchange rates hedging of risks

Statutory evaluation: The statutory status of the company will be evaluated in the following manner:

- Compliance status in respect of Government, regulations and directives affecting the industry/unit, position of obtaining approvals and no objection may be necessary
- Terms of issue debenture trustees, and trust deeds. securities and charges created over assets
- Pending disputes by and against the concern
- Practices regarding payment of statutory dues

Management evaluation: the evaluation of the companies' management will aid I assessing the willingness of the borrower to repay. The aspects involved in such evaluation are:

- Shareholding pattern and controlling interest
- Composition of the broad of directors
- Organization profile adequacy and quality of organizational set-up, extent and effectiveness of delegation
- Competence and integrity of management and its capability to face crisis
- Policies and practices regarding recruitment, training, motivation and career planning of employees
- Style of management functioning, approach and outlook, organizational culture, employees morale and industrial relation
- Management information and monitoring system

In addition to the above mentioned parameters, the rating analysis of debt instruments issued by finance companies may include

following parameters:

Regulatory and competitive environment analysis – Effect of changes in regulatory structure on the operations of the finance company.

Fundamental Analysis: The fundamental issues that need to be evaluated are:

- Assessment of the net worth and the capital adequacy of the finance company
- Details relating to the sources of finance, cost of funds, maturity of the sources, etc
- Analyzing the credit exposure of individuals/corporate, etc, and examining the quality of credit risk management
- Maturity matching process of assets and liabilities and the liquidity management techniques
- Track record of profits, spreads maintained, noninterest income, etc
- Exposure to interest rate fluctuations and hedging mechanism
- Revision of tax laws and the sensitivity of the company to such changes

While the above credit analysis generally applies to long and medium-term debt paper, the criteria for short term-debt paper will be slightly different.

7. Key Characteristics In An Industry Analysis

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The most important of the characteristics that are to be evaluated in an Industry Analysis can be enumerated as given below:

1. Past sales and earnings performance.
2. Permanence of the industry.
 3. The attitude of the government towards the industry.
 4. Labor conditions within the industry.
5. The competitive conditions as reflected by the existence of the entry barriers and
6. The stock prices of the firms in the industry relative to their earnings.

Past Sales and Earnings Performance

For an analyst, the past sales and earnings performance of the firm form a crucial input in forecasting future trends. This is not to say that the firm is going to repeat the same performance again. Rather, the analyst is more interested in examining the contribution of the various factors in the past so that the relevance of these factors individually and relatively can be properly evaluated under present conditions.

In any firm, sales and the earnings play an important role. These variables will exhibit a degree of consistency only when the firm has weathered a variety of economic conditions. The analyst from the observation of these variables will be able to judge the stability of the performance in terms of sales and earnings as well as the growth rates. Another crucial factor is that of the relationship between the sales and the fixed costs. The more the fixed costs, the higher will be the break even point and higher will be the sales volume to be achieved.

Permanence

By permanence, we understand the products and the technology of a particular industry not becoming obsolete in a short span of time. If the industry is not permanent, then investing in that industry altogether becomes a losing proposition. In some of the cases a product with additional features manufactured by employing superior technology makes the existing product totally irrelevant or at least results in the manufacturing process becoming a commercially enviable proposition.

In this age of rapid technological developments, this factor plays a crucial role in Industry Analysis. The Government's role is also an important factor affecting the permanence of the industry.

The Attitude of the Government towards the Industry

It is imperative for an Analyst that he should be well aware of the various Government policies and regulations with reference to an industry in which he is going to invest. The government policies like deregulating an industry by allowing foreign investment, imposing high tariffs on imports and restrictive legislation have a bearing on their performance. Some of the legal restrictions result in the profits being very low for a particular industry. Thus an analyst, for that matter an investor also should be thorough with various government regulations and their implications and should be able to predict, at least broadly, the changes likely to take place in the regulations in the near future.

Labor Conditions

This is an important factor to be considered in industries which are labor intensive. An analyst should examine the various provisions of the labor laws and also go into the possible reasons that may halt the production process and its fallout on the profits of the industry. In case of a prolonged strike, a labor intensive firm will not only lose its customers and goodwill but also may not be able to cover its fixed costs in certain cases.

Competitive Conditions

While analyzing this situation, the three general types of barriers that an analyst should concentrate on, are

1. Existence of product differentiation
2. Absolute cost advantages and
3. Advantages rising from economies of scale.

The existence of the first barrier assures that a new entrant will not be able to charge as much as the existing firms. Also he has to spend large amounts of money on advertising to capture an acceptable share of the market as this situation is usually found in cases where the customers exhibit a high degree of brand loyalty. By absolute cost advantages, we understand that the existing firms are capable of producing and distributing the products at lower costs than the new entrants irrespective of the volume produced. As a result, they enjoy wider profit margins. This may be due to the fact that the existing firms may have exclusive patents, own the resources or superior management skills that are not available to the new entrants.

Economies of scale are usually realized when the production levels are quite high. A new entrant in this case also has to garner a significant market share so that he can avail the benefits from economies of scale. If he fails to do so, he will be able to compete with the prices offered by the existing players.

Industry Share Prices Relative to its Earnings

In addition to the various factors we have been looking at, the analyst also has to look at the present share prices. In this case under priced share would be the best bet. Also he should examine the fact that the share prices are not high due to the overzealous nature of the investors to acquire the shares of the firms in a new industry. Usually the shares of these companies experience high fluctuations depending on the crowd behavior.

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