

Investment Management (DM-312/IB311)

Trimester – III, End-Term Examination: March 2015

Time Allowed: 2 Hrs 30 mins

Max Marks: 50

Sec A (Answer any three questions out of five. Each question carries five marks)

Q1. What is the price of a 5-year bond with a nominal value of INR100, a yield to maturity of 7% (with annual compounding frequency), a 10% coupon rate and an annual coupon frequency?

Q2. XYZ stock has a beta of 0.95 and an expected return of 13.586%. The market portfolio has an expected return of 14%

a) What is the risk-free return?

b) What is the risk premium for the market portfolio?

c) What is the risk premium of XYZ's stock?

d) If the actual return on the market portfolio at the end of the year turns out to be 17%, what return would you now expect from the stock?

Q3. 'Beta is a significant measure of risk. However, it also possesses some critical drawbacks'.
– Discuss.

Q4. 'Capital Asset Pricing Model' is a milestone in development of Portfolio Management Theories.' - Discuss

Q5. 'Market efficiency means that you can randomly pick stocks from a stock exchange to form your portfolio' – Critically examine this statement and give your opinion.

Sec B (Answer any two questions out of three. Each question carries ten marks)

Q6. Read the information given below and answer the questions

Companies	Number of shares Outstanding	Closing Prices Day T	(per share) Day T + 1
1	2,000	\$30.00	\$25.00
2	7,000	55.00	60.00
3	5,000	20.00	25.00
4	4,000	40.00	45.00

a). Assume that a stock price-weighted indicator consisted of the four issues with their prices. What are the values of the stock indicator for Day T and T + 1 and what is the percentage change? (2 marks)

- b). For a value-weighted series, assume that Day T is the base period and the base value is 100. What is the new index value for Day T + 1 and what is the percentage change in the index from Day T? (2 marks)
- c) Compute an unweighted price indicator series, using geometric means. What is the percentage change in the index from Day T to Day T+1? Assume a base index value of 100 on Day T. (2 marks)
- d) Discuss briefly uses of security market indexes and the factors to be considered while constructing a market index? (4 marks)

Q7. Discuss how an individual's investment strategy may change as he or she goes through the accumulation, consolidation, spending and gifting phases of life. (10 Marks)

Q8. Stocks A and B have a correlation coefficient of $\rho = 0.8$. The stocks' expected returns and standard deviations are in the table below. A portfolio consisting of 40% of stock A and 60% of stock B is constructed.

Stock	Expected Return	Standard Deviation
A	20%	25%
B	15%	19%

- a) What is the expected return of the stock A and B portfolio? (1.5 Marks)
- b) What is the standard deviation of the stock A and B portfolio? (1.5 Marks)
- c) What percentage of stock A should be invested to obtain the minimum risk portfolio that contains stock A and B? (3 Marks)
- d) Draw a properly labeled graph of the Markowitz efficient frontier. Explain the shape of the efficient frontier. (4 Marks)

Sec C (Compulsory) 15 Marks

Q 9. Beta Management Company

In early January 1991, Sarah Wolfe was in her office considering new goals and directions for her company for the coming year. Ms. Wolfe was the founder and CEO for the Beta Management Group, a small investment management company based in a Boston suburb. She dealt with a growing number of high-net-worth individual clients and had \$25 million in assets under management. Beta's investment success during the past year had brought in a steady stream of new clients and additional money from existing clients. At the same time, Ms. Wolfe had inquiries from some small institutions, and was hoping to expand her business in 1991.

Beta Management Company was founded in 1988. A wealthy couple had become fed up with their investment losses stemming from the October 1987 crash and had asked their friend, Ms. Wolfe, to manage a portion of their money. While business was slow at first, she gradually

developed a client base through good performance and word of mouth. She considered herself a market strategist, and Beta Management's stated goals were to enhance returns but reduce risks for clients via market timing. Given the small size of her accounts, the easiest way for her to maintain and adjust equity market exposure was to "index". She would keep a majority of Beta's funds in no-load, low-expense index funds (with the remainder in money market instruments), adjusting the level of market exposure between 50% and 99% of Beta's funds in an attempt to "time the market." She had toyed with using a few different index funds at first, but soon settled on exclusive use of Vanguard's Index 500 Trust due to its extremely low expense ratio and its success at closely matching the return on the S&P 500 Index.

While Beta's performance had lagged market returns in 1989, Ms. Wolfe had been quite successful in 1990. She had reduced Beta's equity position to 50% in June, partially missing a large two-month market decline (see Table 1). After nervously waiting out August and September, she began moving money back into the index fund. The report in front of her showed that as of January 4, 1991, Beta Management had 79.2% of its \$25 million invested in the Vanguard fund; Beta had also made money for its clients during a down market year.

This success had brought in enough new money to double the size of Beta in under six months, allowing Ms. Wolfe to finally make the move to work full-time managing money. But she had lost some potential new clients who had thought it unusual that Beta Management used only an index mutual fund and picked none of its own stocks. Ms. Wolfe had felt this same resistance in conversations with a few of the potential institutional clients she was courting. As a result, one of her New Year's resolutions had been to begin looking at some individual stocks for possible purchase for Beta's equity portfolio. She would focus on smaller stocks, since she didn't want to compete with Beta's equity portfolio. She would focus on smaller stocks, since she didn't want to compete with larger, analyst-staffed funds on their own turf, and also because she already had exposure to the S&P 500 stocks through investment in the index fund. She also decided to increase the proportion of Beta's assets in equities, since she felt the market was still a good value and that 1991 would be a good year.

As a first step toward both of these goals, Ms. Wolfe was considering immediately increasing her equity exposure to 80% with the purchase of one of two stocks recommended by her newly hired analyst. Both were small NYSE-listed companies whose stock price had eroded over the past two years (see Table 1) to levels that seemed unreasonably low.

California R.E.I.T. was a real estate investment trust that made equity and mortgage investments in income-producing properties (retail building 57%; industrial 17%; offices 15%; apartments 11%) in Arizona (51%), California (30%), and Washington (19%). Its investments and stock price had been badly damaged by the "World Series" earthquake of 1989 and the downturn in California real estate values (see Table 1). Ms. Wolfe viewed it as a good value, but noticed that it was an extremely volatile stock. Its stock price closed at \$2 ¼ per share on January 4, 1991.

Brown Group, Inc was one of the largest manufacturers and retailers of branded footwear, and had been undergoing a major restructuring program since 1989. Earnings dropped in 1989 but had stayed positive and steady; the stock price had dropped substantially in late 1989 and late 1990. Ms. Wolfe knew that some of Brown's many brand names – including Jordache, Naturalizer, and Buster Brown – would wear well during the current recession, and she like the steady cash flow and earnings. She noted, though, that Brown's stock price seemed quite variable and somewhat sensitive to movements in the stock market. Still, she felt it was an attractive opportunity at its January 4 price of \$24.

Ms. Wolfe felt that now was the right time to begin her program of adding individual stock investments and increasing her equity position. A \$200,000 purchase of one of these stocks would increase her total equity exposure to \$20 million. Still, she had some doubts. She was quite worried about the variability in individual stocks in general, and these stocks in particular. After all, she had always promised her clients reasonable returns with a focus on keeping their exposure to risk under control. She noticed that these stocks both seemed to bounce around in price much more than the market (or the index fund), and she wondered if she was doing the right thing exposing her clients to these new risks.

Table 1 Investment Return Data

Month	Vanguard Index 500 Trust	California R.E.I.T.	Brown Group
1989 – January	7.32	-28.26	9.16
February	-2.47	-3.03	0.73
March	2.26	8.75	-0.29
April	5.18	-1.47	2.21
May	4.04	-1.49	-1.08
June	-0.59	-9.09	-0.65
July	9.01	10.67	2.22
August	1.86	-9.38	0
September	-0.4	10.34	1.88

October	-2.34	-14.38	-7.55
November	2.04	-14.81	-12.84
December	2.38	-4.35	-1.7
1990 – January	-6.72	-5.45	-15.21
February	1.27	5	7.61
March	2.61	9.52	1.11
April	-2.5	-0.87	-0.51
May	9.69	0	12.71
June	-0.69	4.55	3.32
July	-0.32	3.48	3.17
August	-9.03	0	-14.72
September	-4.89	-13.04	-1.91
October	-0.41	0	-12.5
November	6.44	1.5	17.26
December	2.72	-2.56	-8.53

QUESTIONS:

1. Compute the standard deviation of the stock returns of California REIT and Brown Group during the past 2 years.
2. Suppose that Beta's position had been 99% of equity funds invested in the index fund, and 1% in the individual stock. Calculate the standard deviation of this portfolio using each stock. How does each stock affect the variability of the equity investment?
3. Based on your answers to questions 1 and 2, which stock is riskiest?
4. Regress each stock's monthly returns on the Index returns to compute the "beta" for each stock. Relate your answer to question 3.
5. What do you think about the move to a more active stock-picking strategy?

Note: Please make necessary assumptions, if required.