Investment Analysis & Portfolio Management

Part 1: The Investment Background

Chapter 1: The Investment Background

(CFA Question #33 from 99, 00, 01, 02 sample exams.)
1. An investor wants to have $1 million when she retires in 20 years. If she can earn a 10 percent annual return, compounded annually, on her investments, the lump-sum amount she would need to invest today to reach her goal is closest to:
   A. $100,000.
   B. $117,459
   C. $148,644.
   D. $161,506.

(CFA Question #47 from 98 sample exams.)
2. An analyst expects a firm’s earnings per share to grow at 8 percent a year. If the firm now earns $3.50 a share, its earnings per share five years from now are expected to be:
   A. $4.11.
   B. $4.90.
   C. $5.14.
   D. $5.17.

(CFA Question #36 from 99, 00, 01, 02 sample exams.)
3. An investment promises to pay $100 one year from today, $200 two years from today, and $300 three years from today. If the required rate of return is 14 percent, compounded annually, the value of this investment today is closest to:
   A. $404.
   B. $444.
   C. $462.
   D. $516.

(CFA Question #49 from 98 sample exam.)
4. A bank lends a company $2,000,000 to be repaid in three equal year-end installments. If the bank charges 9 percent interest, the annual installment payment will be closest to:
   A. $666,667.
   B. $724,871.
   C. $726,667.
   D. $790,110.

(CFA Question #50 from 98 sample exam.)
5. Doris Breen has $800,000 in her pension plan and wants to receive equal year-end payments for the next 15 years before exhausting her pension. If Doris continues to earn 9 percent on her pension, the yearly amount the pension plan will pay her will be closest to:
   A. $53,333.
   B. $58,133.
   C. $91,052.
   D. $99,247.

(CFA Question #24 from 93, 96 actual exams, and 97 sample exam.)
6. At an 8 percent rate of return, how much must an investor have in her investment account on her 65th birthday in order that she can withdraw $30,000 on that birthday and on each of the next 19 birthdays?
   A. $264,540.
   B. $288,120.
   C. $294,540.
   D. $318,120.
7. An individual deposits $1,500 today and $1,500 one year from today into an interest-earning account. The deposits earn 12 percent compounded annually. The total amount in the account two years from today is closest to:
   A. $3,180.
   B. $3,360.
   C. $3,382.
   D. $3,562.

8. You plan to buy common stock and hold it for one year. You expect to receive both $1.50 in dividends and $26 from the sale of stock at the end of the year. If you wanted to earn a 15 percent return, what is the maximum price you would pay for the stock today? (1994 CFA Exam)*
   a. $22.61
   b. $23.91
   c. $24.50
   d. $27.50

9. Given a data series that is normally distributed with a mean of 100 and a standard deviation of 10, about 95 percent of the numbers in the series will fall within which of the following ranges? (1994 CFA exam)
   a. 60 - 140
   b. 70 - 130
   c. 80 - 120
   d. 90 – 110

10. A stock with a coefficient of variation of 0.5 has a(n)
   a. variance equal to half the stock’s expected return.
   b. expected return equal to half the stock’s variance.
   c. expected return equal to half the stock’s standard deviation.
   d. standard deviation equal to half the stock’s expected return.
   (CFA Level 1 Sample Exam, 1999, #25)

11. Which of the following does not affect the risk premium on investments?
   a. The set of investment opportunities for the economy
   b. Business risk
   c. Financial risk
   d. Liquidity risk

12. Which of the following does not affect the real risk free rate?
   a. Financial leverage
   b. Expected rate of inflation
   c. Conditions in the capital market
   d. Investment opportunities in the economy
13. Which of the following statements about the standard deviation are true? A standard deviation:
   I. is the square root of the variance.
   II. is denominated in the same units as the original data.
   III. can be a positive or a negative number.
   a. I only.
   b. I and II only.
   c. I and III only.
   d. II and III only.
   *(CFA Level 1 Sample Exam, 1999, #23)*

15. The unsystematic risk of a security is also called its
   a. Perceived risk.
   b. Unique or asset-specific risk.
   c. Market risk.
   d. Fundamental risk.

16. Which type of risk is essentially eliminated by diversification?
   a. Perceived risk.
   b. Market risk.
   c. Systematic risk.
   d. Unsystematic risk.

17. The systematic risk principle states that
   a. Systematic risk doesn’t matter to investors.
   b. Systematic risk can be essentially eliminated by diversification.
   c. The reward for bearing risk is independent of the systematic risk of an investment.
   d. The reward for bearing risk depends only on the systematic risk of an investment.

18. The systematic risk principle has an important implication, which is that
   a. Systematic risk is preferred to unsystematic risk.
   b. Systematic risk is the only risk that can be reduced by diversification.
   c. The expected return on an asset is independent of its systematic risk.
   d. The expected return on an asset depends only on its systematic risk.

19. The systematic risk of a stock is measured by its
   a. Beta coefficient.
   b. Correlation coefficient.
   c. Return standard deviation.
   d. The risk-free rate plus a market risk premium.

20. Risk premiums above the riskless rate of return must:
   a. account for inflation
   b. account for overall market risk.
   c. account for business and financial risk.
   d. account for purchasing power risk.
   e. 
21. Which of the following is likely to have the highest level of risk?
   A) U.S. government bonds
   B) U.S. Treasury bills
   C) the CPI
   D) large cap stocks
   E) small cap stocks

22. A financial market’s security market line (SML) describes
   a. The relationship between systematic risk and expected returns.
   b. The relationship between unsystematic risk and expected returns.
   c. The relationship between systematic risk and unexpected returns.
   d. The relationship between unsystematic risk and unexpected returns.

23. In the capital asset pricing model (CAPM), a security’s expected return is
   a. The return on the market portfolio.
   b. The risk-free rate plus the return on the market portfolio.
   c. The return on the market portfolio plus a market risk premium.
   d. The risk-free rate plus a market risk premium.

24. Which of the following will cause the slope of the Security Market Line to change?
   a. An increase in inflation.
   b. A decrease in real growth.
   c. Unexpected growth of the money supply.
   d. Increase in the spread between AAA and BBB bonds.

25. The coefficient of variation is a useful comparison measure when:
   a. two data sets are expressed in different units.
   b. the means of two data sets are very close together.
   c. the standard deviation can not be calculated.
   d. the data set is skewed to the left.

<table>
<thead>
<tr>
<th>Company X</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>End-of-Year Price</td>
<td>Dividends</td>
</tr>
<tr>
<td>19x0</td>
<td>74.60</td>
<td>2.88</td>
</tr>
<tr>
<td>19x1</td>
<td>64.30</td>
<td>3.44</td>
</tr>
<tr>
<td>19x2</td>
<td>67.70</td>
<td>3.44</td>
</tr>
<tr>
<td>19x3</td>
<td>56.70</td>
<td>3.44</td>
</tr>
<tr>
<td>19x4</td>
<td>96.25</td>
<td>3.44</td>
</tr>
<tr>
<td>19x5</td>
<td>122.00</td>
<td>3.71</td>
</tr>
</tbody>
</table>

26. Using the table provided above, calculate the following for Company X:
   a. Interim Return (also known as Total Return) for each yearly period
   b. Arithmetic Mean of returns.
   c. Geometric return of returns.
   d. Standard deviation and Variance (use arithmetic mean)
27. When the Arithmetic Mean is compared to the Geometric Mean, which of the following statement(s) is/are TRUE?
A. Arithmetic Mean is an appropriate measure of the return over multiple periods.
B. Geometric Mean is an appropriate measure of the return for a particular time period.
C. Geometric Mean is always larger than Arithmetic Mean.
D. Arithmetic Mean is the nth root of the product derived from the multiplication of a series of return relatives.
E. None of the above statements are true statements.

Answer each question. Be neat
28. When should the geometric mean be used to measure returns? Why will it always be less than the arithmetic mean (unless the numbers are identical)?
29. What is the mathematical linkage between the arithmetic mean and the geometric mean for a set of security returns?

Here are year-end prices and dividends for SBC.
30. What is the average annual return for the period shown? 4

<table>
<thead>
<tr>
<th>SBC</th>
<th>Close Price</th>
<th>Dividends</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>$46.67</td>
<td>$0.99</td>
</tr>
<tr>
<td>1999</td>
<td>$46.64</td>
<td>$0.95</td>
</tr>
<tr>
<td>1998</td>
<td>$50.30</td>
<td>$1.14</td>
</tr>
<tr>
<td>1997</td>
<td>$33.64</td>
<td>$1.78</td>
</tr>
<tr>
<td>1996</td>
<td>$23.11</td>
<td>$1.70</td>
</tr>
<tr>
<td>1995</td>
<td>$24.67</td>
<td></td>
</tr>
</tbody>
</table>

a) 13.8%
b) 11.2%
c) 21.4%
d) 20.7%

31. What is the standard deviation of the annual return for the period shown? 2
a) 18.3%
b) 14.9%
c) 26.6%
d) 29.3%
The following three questions refer to the table below.

<table>
<thead>
<tr>
<th></th>
<th>Amgen</th>
<th>3M</th>
<th>MCI Worldcom</th>
<th>American Airlines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Deviation</td>
<td>56%</td>
<td>19%</td>
<td>68%</td>
<td>17%</td>
</tr>
<tr>
<td>Average Annual Return</td>
<td>44%</td>
<td>20%</td>
<td>28%</td>
<td>16%</td>
</tr>
</tbody>
</table>

32. For the period shown, which stock is the best investment for an investor who wants a high return and is willing to tolerate high risk?  
   a) Microsoft  
   b) American Airlines  
   c) McDonald's  
   d) 3M

33. For the period shown, which stock is the best investment for an investor who wants low risk?  
   a) Microsoft  
   b) American Airlines  
   c) McDonald's  
   d) 3M

34. For the period shown, which stock is the least attractive in risk/return?  
   a) Microsoft  
   b) American Airlines  
   c) McDonald's  
   d) 3M

The following three questions refer to the table below.

<table>
<thead>
<tr>
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<th>3M</th>
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<th>American Airlines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Deviation</td>
<td>61%</td>
<td>17%</td>
<td>26%</td>
<td>19%</td>
</tr>
<tr>
<td>Average Annual Return</td>
<td>53%</td>
<td>16%</td>
<td>12%</td>
<td>20%</td>
</tr>
</tbody>
</table>

36. For the period shown, which stock is the best investment for an investor who wants a high return and is willing to tolerate high risk?  
   a) Amgen  
   b) 3M  
   c) MCI Worldcom  
   d) American Airlines
37. For the period shown, which stock is the best investment for an investor who wants low risk?  
   a) Amgen  
   b) 3M  
   c) MCI Worldcom  
   d) American Airlines  

38. For the period shown, which stock is the least attractive in risk/return?  
   a) Amgen  
   b) 3M  
   c) MCI Worldcom  
   d) American Airlines  

39. The beta is a measure of:  
   a) How an investment moves in relation to interest rates  
   b) How an investment moves in relation to the market  
   c) The gain on an investment  
   d) The standard deviation of an investment  

5. The holding period return (HPR) on a share of stock is equal to  
   A) the capital gain yield over the period, plus the dividend yield.  
   B) the capital gain yield over the period, plus the inflation rate.  
   C) the current yield plus the dividend yield.  
   D) the dividend yield plus the risk premium.  
   E) the change in stock price.  

6. A risk-free intermediate or long-term investment  
   A) is free of all types of risk.  
   B) does guarantee the future purchasing power of its cash flows.  
   C) does not guarantee the future purchasing power of its cash flows as it is insured by the U.S. Treasury.  
   D) A and B.  
   E) B and C.  

7. In words, the real rate of interest is approximately equal to  
   A) the nominal rate times the inflation rate.  
   B) the inflation rate minus the nominal rate.  
   C) the nominal rate minus the inflation rate.  
   D) the inflation rate divided by the nominal rate.  
   E) the nominal rate plus the inflation rate.  

2. Olivia is a risk-averse investor. Alex is a less risk-averse investor than Olivia. Therefore,  
   A) for the same risk, Alex requires a higher rate of return than Olivia.  
   B) for the same return, Alex tolerates higher risk than Olivia.  
   C) for the same risk, Olivia requires a lower rate of return than Alex.  
   D) for the same return, Olivia tolerates higher risk than Alex.  
   E) cannot be determined.
3. If a T-bill pays 5 percent, which of the following investments would not be chosen by a risk-averse investor?

A) An asset that pays 10 percent with a probability of 0.60 or 2 percent with a probability of 0.40.
B) An asset that pays 10 percent with a probability of 0.40 or 2 percent with a probability of 0.60.
C) An asset that pays 10 percent with a probability of 0.30 or 3.75 percent with a probability of 0.70.
D) An asset that pays 10 percent with a probability of 0.20 or 3.75 percent with a probability of 0.80.
E) neither A nor B would be chosen

8. Ali is more risk-averse than Nasser. On a graph that shows Ali's and Nasser's indifference curves, which of the following is true? Assume that the graph shows expected return on the vertical axis and standard deviation on the horizontal axis.

I) Ali's indifference curves will have flatter slopes than Nasser's.
II) Ali and Nasser's indifference curves might intersect.
III) Ali and Nasser's indifference curves will not intersect.
IV) Ali's indifference curves will have steeper slopes than Nasser's.
V) Ali's indifference curves will be downward sloping and Nasser's will be upward sloping.
A) I and V
B) I and III
C) III and IV
D) I and II
E) II and IV

3. If a T-bill pays 5 percent, which of the following investments would not be chosen by a risk-averse investor?

A) An asset that pays 10 percent with a probability of 0.60 or 2 percent with a probability of 0.40.
B) An asset that pays 10 percent with a probability of 0.40 or 2 percent with a probability of 0.60.
C) An asset that pays 10 percent with a probability of 0.30 or 3.75 percent with a probability of 0.70.
D) An asset that pays 10 percent with a probability of 0.20 or 3.75 percent with a probability of 0.80.
E) neither A nor B would be chosen