

國立中央大學九十一學年度碩士班研究生入學試題卷

所別: 財務金融學系 甲組 考試科目: 財務管理 共 3 頁 第 1 頁

計算題(每題 10 分)

1. (1) Assume that as of today, the annualized two-year interest rate is 12 percent, while the one year interest rate is 11 percent. Use only this information to estimate the one-year forward rate.
(2) Assume that the liquidity premium on a two-year security is 0.4 percent. Use this information to reestimate the one-year forward rate.
(3) Assume that as of today, the annualized interest rate on a three-year security is 12 percent, while the annualized interest rate on a two-year security is 9 percent. Use only this information to estimate the one-year forward rate two years from now.
2. (1) Assume an investor purchased a six-month T-bill with a \$10,000 par value for \$9,000 and sold it 90 days later for \$9,200. What is the yield?
(2) Newly issued three-month T-bill with a par value of \$10,000 sold for \$9,700. Compute the T-bill discount.
(3) Assume an investor purchased six-month commercial paper with a face value of \$1,000,000 for \$ 960,000. What is the yield?
(4) Stanford Corporation arranged a repurchase agreement in which it purchased securities for \$4,900,000 and will sell the securities back for \$5,000,000 in 50 days. What is the yield (or repo rate) to Stanford Corporation?
3. (1) Assume the following information for an existing bond that provides annual coupon payments:
Par value = \$1,000
Coupon rate = 11 %
Maturity = 4 years
Required rate of return by investors = 12 %
 - a. What is the present value of the bond?
 - b. If the required rate of return by investors were 14 percent instead of 12 percent, what would be the present value of the bond?
 - c. If the required rate of return by investors were 9 percent, what would be the present value of the bond?
- (2) Assume the following information for existing zero-coupon bonds:
Par value = \$100,000
Maturity = 3 years
Required rate of return by investors = 13 %

How much should investors be willing to pay for these bonds?
- (3) Assume that you require a 15 percent return on a zero-coupon bond which a par value of \$1,000 and six years to maturity. What is the price you should be willing to pay for this bond?
4. Sun Devil Savings has just purchased bonds for \$38 million that have a par value of \$40 million, five years remaining to maturity, and a coupon rate of 13 percent. It expects the required rate of return on these bonds to be 11 percent two years from now.
 - (1) At what price could Sun Devil Savings sell these bonds two year from now?
 - (2) What is the expected annualized yield on the bonds over the next two years, assuming they are to be sold in two years?
 - (3) If the anticipated required rate of return of 11 percent in two years is overestimated, how would the actual selling price differ from the forecasted price? How would the actual annualized yield over the next two years differ from the forecasted yield?

參考用

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5. (1) Assume the following information over a five-year period:

Average risk-free rate = 6 %
Average return for Crane stock = 11 %
Average return for Load stock = 14 %
Standard deviation of Crane stock returns = 2 %
Standard deviation of Load stock returns = 2 %
Beta of Crane stock = 0.8
Beta of Load stock = 1.1

Determine which stock has higher risk-adjusted returns when using the Sharpe index. Which stock has higher risk-adjusted returns when using the Treynor index? Show your work.

- (2) Assume that Duever stock is priced at \$80 per share and pays a dividend of \$2 per share. Investors purchase the stock on margin, paying \$50 per share and borrowing the remainder from the brokerage firm at 12 percent annualized. If, after one year, the stock is sold at a price of \$90 per share, what is the return to the investors?
- 6 You have been hired as a financial analyst to do a feasibility study of a new video game for Passivision. Marketing research suggests Passivision can sell 12,000 units per year at \$62.50 net cash flow per unit for the next 10 years. Total annual operating cash flow is forecasted to be $\$62.50 \times 12,000 = \$750,000$. The relevant discount rate is 10 percent. The required initial investment is \$10 million.
- What is the base case NPV?
 - After one year, the video game project can be abandoned for \$200,000. After one year, expected cash flows will be revised upward to \$1.5 million or to \$0. What is the option value of abandonment? What is the revised NPV?
- 7 There are two stocks in the market, stock A and stock B. The price of stock A today is \$50. The price of stock A next year will be \$40 if the economy is in a recession, \$55 if the economy is normal, and \$60 if the economy is expanding. The attendant probabilities of recession, normal times, and expansion are 0.1, 0.8, and 0.1, respectively. Stock A pays no dividend.
- Assume the CAPM is true. Other information about the market includes:
- $SD(R_M)$ = Standard deviation of the market portfolio
= 0.10
- $SD(R_B)$ = Standard deviation of stock B's return
= 0.12
- \bar{R}_B = Expected return on Stock B
= 0.09
- $\text{Corr}(R_A, R_M)$ = The correlation of stock A and the market
= 0.8
- $\text{Corr}(R_B, R_M)$ = The correlation of stock B and the market
= 0.2
- $\text{Corr}(R_A, R_B)$ = The correlation of stock A and stock B
= 0.6
- If you are a typical, risk-averse investor, which stock would you prefer? Why?
 - What are the expected return and standard deviation of a portfolio consisting of 70 percent of stock A and 30 percent of stock B?
 - What is the beta of the portfolio in part (b)?

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- 8 You are a financial analyst hired to value a new 30-year callable, convertible bond. The bond has a 6-percent coupon payable annually. The conversion price is \$125. The stock currently sells for \$35. The stock price is expected to rise 15 percent per year. The bond is callable at \$1,100. The required return on the bond is 10 percent.
- (1). What is the straight bond value?
 - (2). What is the conversion value?
 - (3). How long would it take for the conversion value to exceed a call price?
- 9 The Stieben Company has determined that the following will be true next year:
- T = Ratio of total assets to sales = 1
 - P = Net profit margin on sales = 5%
 - d = Dividend-payout ratio = 50%
 - L = Debt-equity ratio = 1
- a. What is Stieben's sustainable growth rate in sales?
 - b. Can Stieben's actual growth rate in sales be different from its sustainable growth rate? Why or why not?
 - c. How can Stieben change its sustainable growth?
- 10 Harrods PLC has a market value of £ 600 million and 30 million shares outstanding. Selfridge Department Store has a market value of £ 200 million and 20 million shares outstanding. Harrods is contemplating acquiring Selfridge Department Store. Harrods' CFO concludes that the combined firm with synergy will be worth £ 1 billion and Selfridge can be acquired at a premium of £ 100 million.
- (1). If Harrods offers 15 million shares to exchange for the 20 million shares of Selfridge, what will the after-acquisition stock price of Harrods be?
 - (2). To make the value of a stock offer equivalent to a cash offer of £ 300 million, what would be the proper exchange ratio of the two stocks?