Midterm Review
Spring 2022

Prof. Olivier Wang

Financial Instruments and Markets

18. Which of the following best explains a decline in a dealer's inventory:

    (a) bid price and offer price are too high

    (b) bid price is too high and offer price is too low

    (c) bid price is too low and offer price is too high

    (d) bid price and offer price are too low

TVM and Return Measures

5. A riskfree security pays a dividend of 200$ after one year, 400$ after two years, 800$ after three years, and thereafter it never pays dividends again. The riskfree interest rate is 3%. What is the current price of the security:

   (a) 1203.3

   (b) 1303.3

   (c) 1345.2

   (d) 1400

19. Suppose the yield on a one-year zero-coupon bond is 7%. The yield on a two-year zero-coupon bond is 8%. You expect the one-year yield next year to rise to 7.5%. Which of the following strategies would give you the highest expected HPR over one year?

   a. Invest in the one-year bond
   b. Invest in the two-year bond and sell after one year
   c. The expected returns on a and b are equal
   d. Impossible to tell

You have $100 to invest. The price of XYZ stock is $100. You sell short one share of XYZ and then invest all available funds (your initial $100 and any short-sale proceeds) in one-year zero-coupon bonds with 5% yield to maturity. One year later, the price of XYZ is $90. There are no dividends. What is the holding period return (HPR) on your $100?

a. -5%

b. 0%

c. 15%

d. 20%

Portfolios: 2 risky assets

20. Suppose that among the many stocks in the market there are two securities, A and B, with the following characteristics: A has mean .08 and $\sigma = .4$ and B has mean .13 and $\sigma = .6$. If the correlation between these two is $\rho = -1$, and if it is possible to borrow and lend at the risk-free rate, R_f, then the equilibrium risk-free rate must be:

    (a) 8%

    (b) 10%

    (c) 13%

    (d) any R_f is possible

Portfolios: Investor Preferences

Suppose Walmart has mean 5% and standard deviation 10%, and Tesla has mean 20%. The risk-free rate is 4%. Investors 1 and 2 have mean-variance utility.

- Investor 1 is indifferent between Walmart, Tesla, and the risk-free asset. What is her risk aversion? What is the standard deviation of Tesla?
- Investor 2 is indifferent between Tesla and a 12% risk-free return. Does he prefer Walmart or the risk-free asset? Which investor has the steeper indifference curve at Walmart?

Portfolios: risk-free asset

(continuing with the previous numbers) Investor 1's optimal portfolio has mean 16.5% and standard deviation 25%. Investor 2's optimal portfolio has standard deviation 50%.

- What is the mean of investor 2's optimal portfolio?

CAPM

2.1 CAPM

A regression of the return on Ebay on the return of S&P 500 gives you the following result:

$$R_{ebay} = 0.03 + 1.45 R_{S\&P500} + error_{ebay}.$$

Suppose that the standard deviation of the S&P 500 return is 0.20 and the standard deviation of $error_{ebay}$ is 0.10, what fraction of the total risk of Ebay is systematic risk?