F&FM BPES
Winter Semester 2014
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Homework 2
Due Thursday 06/03 (in class)
One (hard) copy per group

Part I: Multiple Choice

Question 1.

1) Stocks A, B, C and D have beta of 1.5, 0.4, 0.9 and 1.7 respectively. What is the beta of an equally weighted portfolio of A, B, and C?
    A) .25
    B) .93
    C) 1.00
    D) 1.13
2) Consider the CAPM. The risk-free rate is 6% and the expected return on the market is 18%. What is the expected return on a stock with a beta of 1.3?
    A) 6%
    B) 15.6%
    C) 18%
    D) 21.6%
3) Consider the CAPM. The risk-free rate is 6% and the expected return on the market is 15%. What is the beta on the stock with an expected return of 12%?
    A) .5
    B) .7
    C) 1.2
    D) 1.4
4) The market portfolio has a beta of
    A) -1.0
    B) 0
    C) 0.5
    D) 1.0
5) According to the CAPM, a security with a
    A) negative alpha is considered a good buy
    B) positive alpha is considered overpriced
    C) positive alpha is considered underpriced
    D) zero alpha is considered a good buy
6) According to the CAPM
    A) all securities must lie on the capital market line
    B) all securities must lie on the security market line
    C) underpriced securities lie below the security market line
    D) overpriced securities lie above the security market line

7) You invest $600 in security A with a beta of 1.5 and $400 in security B with a beta of .90. The beta of this formed portfolio is
    A) 1.14
    B) 1.20
    C) 1.26
    D) 2.40
8) Security A has an expected rate of return of 12% and a beta of 1.10. The market expected rate of return is 8% and the risk-free rate is 5%. The alpha of the stock is
    A) -1.7%
    B) 3.7%
    C) 5.5%
    D) 8.7%
9) Consider the following two stocks, A and B. Stock A has an expected return of 10% and a beta of 1.20. Stock B has an expected return of 14% and a beta of 1.80. The expected market rate of return is 9% and the risk-free rate is 5%. Security … would be considered a good buy because
    A) A, it offers an alpha of 0.8%
    B) A, it offers an alpha of 2.2%
    C) B, it offers an alpha of 1.8%
    D) B, it offers an alpha of 2.4%
10) The expected return of the risky asset portfolio with minimum variance is
    A) the market rate of return
    B) zero
    C) the risk-free rate
    D) there is not enough information to answer this question
11) Assume that both X and Y are well-diversified portfolios and the risk-free rate is 8%. Portfolio X has an expected return of 14% and a beta of 1.00. Portfolio Y has an expected return of 9.5% and a beta of 0.25. In this situation, you would conclude that portfolios X and Y
    A) are in equilibrium
    B) offer an arbitrage opportunity
    C) are both underpriced
    D) you cannot conclude anything
12) Consider a market portfolio M composed of three equally weighted securities: A, B, and C. What will be a beta of security C if the covariance between A and M is equal to 0.01, beta of B is equal to 1.5, and standard deviation of M is 20%?
    A) 0.85
    B) 1.05
    C) 1.25
    D) 1.45
13) If under CAPM the expected risk premium on asset A is 15%, the expected risk premium on the market is equal to 10% and beta of A is equal 2, then, most probably, an investor
    A) would sell A
    B) would buy A
    C) would not do anything

D) would wait for the beta to increase

14) Assume CAPM. Suppose that the price of MSFT at the beginning of the period is equal to $50, risk-free rate is equal to 3%, market expected return is 12%, and is expected to be constant over time. Assume also that there is another stock, with the same beta as MSFT, with expected return of 10% correctly priced by CAPM. At what end-period expected price will MSFT be fairly priced by CAPM, given that within this period it pays $1 of dividend?

A) $51.50
B) $54.00
C) $55.00
D) $56.00

15) If the simple CAPM is valid, which of the portfolios below is not consistent?

Portfolio	Expected Return	Beta
A)	10%	0.8
B)	15%	1.3
C)	20%	1.1
D)	18%	1.4

16) According to the CAPM, the risk premium an investor expects to receive on any stock is

A) directly related to the risk aversion of the particular investor
B) inversely related to the risk aversion of the particular investor
C) directly related to the beta of the stock
D) inversely related to the alpha of the stock

Part II. Detailed Questions

Question 2.
Are the following statements true or false? Explain.

a. Stocks with a beta of zero offer an expected rate of return of zero.

b. The CAPM implies that investors require a higher return to hold highly volatile securities.
c. You can construct a portfolio with a beta of 0.75 by investing 0.75 of the budget in T-Bills and the remainder in the market portfolio.

Question 3.
If the CAPM is valid, which of the following situations is possible? Explain. Consider each situation separately.

a.

Portfolio	**Expected Return**	**Beta**
A	20%	1.4
B	25%	1.2

b.

Portfolio	**Expected Return**	**Standard Deviation**
A	30%	35%
B	40%	25%

c.

Portfolio	**Expected Return**	**Standard Deviation**
T-Bills	10%	0%
Market	18%	24%
A	16%	12%

d.

Portfolio	**Expected Return**	**Standard Deviation**
T-Bills	10%	0%
Market	18%	24%
A	20%	22%

Question 4.
The stock PolarBear.com trades on both the South Pole Stock Exchange and the North Pole Stock Exchange.

(a) Suppose the price on the North Pole is $18. What does the No-Arbitrage Condition say about the price on the South Pole? (Assume no trading costs.)

(b) Suppose the price on the North Pole is $18 and the price on the South Pole is $17? How can you make an arbitrage profit? (Assume no trading costs.)

(c) Suppose that the price on the North Pole is $18, that buying or selling on the North Pole costs $2, and that buying or selling on the South Pole is free. What does the

No-Arbitrage Condition say about the price on the South Pole?

Question 5.
Suppose that there are two securities RAIN and SUN. RAIN pays $100 if there is any rain during the next world cup soccer final. SUN pays $100 if there is no rain. Suppose that the world cup soccer final is 1 year from today, and suppose that RAIN is trading at a price of $23 and SUN is trading at a price of $70.

(a) If you buy 1 share of RAIN and 1 share of SUN, what is your payoff after 1 year depending on the weather?

(b) What does the No-Arbitrage Condition imply about the price of a 1-year zero-coupon bond? (Assume no trading costs.)

(c) Suppose that a 1-year zero-coupon bond is trading at $90. Show how you would set up a transaction to earn a riskless arbitrage profit. (Assume no trading costs.)

(d) Suppose that trading zero-coupon bonds is costless, but trading RAIN and SUN each cost $2 per $100 face value. Can you still make an arbitrage profit?