

ECON 133 – Securities Markets – FALL 2010, UCSC

MIDTERM EXAM 1 (12 Questions, 100 Points)

Name: AK

Student Number: _____

Instructions: You have 70 minutes to complete this test. This is a closed book, closed notes test. You may use a calculator. For multiple choice questions, circle the choice that best answers the question. For problem solving questions, show your work (for partial credit) and box your final answers. ANSWERS NOT BOXED WILL NOT BE CONSIDERED. This testing procedure will be covered by the University of California Academic Integrity Protocol.

Multiple Choice (5 Questions, 15 Points):

1. An order to buy or sell a security at the current price is a _____. (3 Pts.)
 - A. limit order
 - B. market order
 - C. stop loss order
 - D. stop buy order

2. The difference between the price at which a dealer is willing to buy, and the price at which a dealer is willing to sell, is called the _____. (3 Pts.)
 - A. market spread
 - B. bid-ask spread
 - C. bid-ask gap
 - D. market variation

3. In the mean-standard deviation graph, the line that connects the risk-free rate and the optimal risky portfolio, P, is called _____. (3 Pts.)
 - A. the capital allocation line
 - B. the indifference curve
 - C. the investor's utility line
 - D. the security market line

4. Rational risk-averse investors will always prefer portfolios _____. (3 Pts.)
 - A. located on the efficient frontier to those located on the capital market line
 - B. located on the capital market line to those located on the efficient frontier
 - C. at or near the minimum variance point on the efficient frontier
 - D. that are risk-free to all other asset choices

5. According to the capital asset pricing model, a security with a _____. (3 Pts.)
 - 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

Scenario Analysis (5 Questions, 60 Points)

You are a portfolio manager with \$1,000,000 of funds under management. The forecast for the market in the coming year is as follows:

Market Scenario	Probability of Occurrence	Stock Market Return	Bond Market Return
Bull Market	25%	25%	8%
Neutral Market	50%	10%	5%
Bear Market	25%	-5%	3%

The risky portfolio is comprised of stocks and bonds, in a ratio of 60% stocks and 40% bonds. You may assume that this 60/40 ratio happens to be the optimal risky portfolio. The correlation coefficient between stock and bonds is 0.2.

The T-Bills are yielding a return of 5% and the borrowing rate is also 5%.

6. What is the expected return and standard deviation for stocks? (10 Pts.)

$$E(r_s) = \sum_{s=1}^3 p(s) r_s(s)$$

$$= .25(25\%) + .5(10\%) + .25(-5\%)$$

$$E(r_s) = 10\%$$

$$\sigma_s^2 = \sum_{s=1}^3 p(s) [r_s(s) - E(r_s)]^2$$

$$= .25(.15)^2 + .5(0)^2 + .25(-.15)^2$$

$$= .01125$$

$$\sigma_s = .106066$$

$$\sigma_s = 10.61\%$$

7. If the expected return and standard deviation for bonds are 5.25% and 1.75% respectively, what is the expected return and standard deviation of the risky portfolio? (15 Pts.)

$$w_S = .6$$

$$w_B = .4$$

$$E(r_p) = w_S E(r_S) + w_B E(r_B) \\ = .6(10\%) + .4(5.25\%)$$

$$\boxed{E(r_p) = 8.10\%}$$

$$\sigma_p^2 = w_S^2 \sigma_S^2 + w_B^2 \sigma_B^2 + 2w_S w_B \rho \sigma_S \sigma_B \\ = (.6)^2 (.1061)^2 + (.4)^2 (.0175)^2 + 2(.6)(.4)(.0175)(.1061)(.2)$$

$$= .0042798436$$

$$\sigma_p = .0654205136$$

$$\boxed{\sigma_p = 6.54\%}$$

8. In dollars, how much of the total funds under management would you allocate into the risky portion of the portfolio if the target rate of return on the complete portfolio is 7%? (10 Pts.)

$$E(r_c) = r_f + y [E(r_p) - r_f]$$

$$7\% = 5\% + y [3.1\%]$$

$$y = \frac{2\%}{3.1\%}$$

$$= .6451612903$$

$$\boxed{\$1,000,000 \cdot y = \$645,161.29}$$

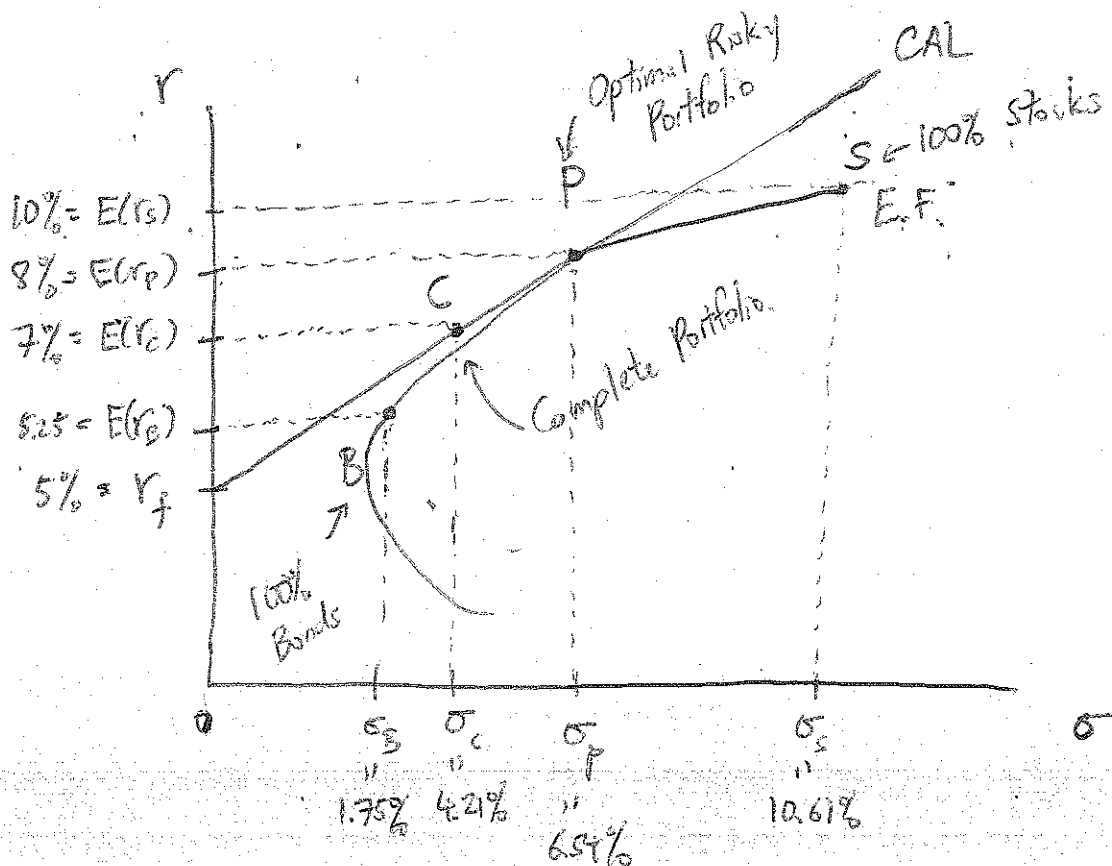
9. Given your work to answer Question 8, solve for the standard deviation of the complete portfolio that delivers 7%. (5 Pts.)

$$\sigma_C = \gamma \sigma_P$$

$$= 0.6451612903 (6.54\%)$$

$$\sigma_C = 4.21\%$$

10. Sketch the Efficient Frontier and the Capital Allocation Line (CAL). Be sure to label all relevant points on the diagram, including each axis, Optimal Risky Portfolio, risk-free rate, and the approximate position of 100% Bonds and 100% Stocks, and the portfolio that delivers 7% expected return. All points must be labeled to receive credit. This diagram must indicate correct relative positions, but need NOT be drawn to scale. (20 Pts.)



CAMP and Stock's Alpha (2 Questions, 25 Points):

The expected return on stock A and B are 10% and 15% respectively. The beta of A is 0.8 while that of B is 1.5. The T-bill rate is currently 5% while the expected rate of return of the S&P 500 Index is 15%. The standard deviation of stock A is 10% annually, while that of B is 31%, and that of the index is 20%.

11. Based on each stock's alpha, would you choose to add either of these stocks to your holdings? Explain. (15 Pts.)

$$\begin{aligned}\alpha_A &= E(r_A) - E(r_A)^{CAPM} \\ &= 10\% - [5\% + 0.8(10\%)] \\ &= -3\% < 0\end{aligned}$$

$$\begin{aligned}\alpha_B &= E(r_B) - E(r_B)^{CAPM} \\ &= 15\% - [5\% + 1.5(10\%)] \\ &= -5\% < 0\end{aligned}$$

Would not choose either.

12. If instead you could only invest in T-bills and one of these stocks, which one would you choose? Explain. (Hint: You want to invest in a security that gives the steeper CAL) (10 Pts.)

$$\begin{aligned}S_A &= \frac{10\% - 5\%}{10\%} \\ &= \frac{1}{2}\end{aligned}$$

$$\begin{aligned}S_B &= \frac{15\% - 5\%}{31\%} \\ &= \frac{10}{31}\end{aligned}$$

$S_A > S_B$, so invest in A.