ECON 133 – Securities Markets – FALL 2010, UCSC

HOMEWORK # 2 (Due Friday Oct. 8, Beginning of Class)

1. **CH.5.6** The stock of Business Adventures sells for $40 a share. Its likely dividend payout and end-of-year price depend on the state of the economy by the end of the year as follows:

Business Adventures:

State of the World	*Dividend*	*Stock Price*
Boom	$2.00	$50
Normal Economy	1.00	42
Recession	0.50	34

   a) Calculate the expected holding-period return and standard deviation of the holding-period return. All three scenarios are equally likely
   b) Calculate the expected return and standard deviation of a portfolio invested half in Business Adventures and half in Treasury bills. The return on bills is 4%.

2. **CH.5.12** For problems 12, 13 and 14, assume you manage a risky portfolio with an expected rate of return of %17 and a standard deviation of 27%. The T-bill rate is 7%.

   a) Your client chooses to invest 70% of a portfolio in your fund and 30% in a T-bill money market fund. What is the expected return and standard deviation of your client's portfolio?
   b) Suppose your risky portfolio includes the following investments in the given proportions:

Your Portfolio:

Security	*Proportion*
Stock A	27%
Stock B	33%
Stock C	40%

   What are the investment proportions of your client's overall portfolio, including the position of T-bills?

   c) What is the reward-to-volatility (Sharp) ratio of your risky portfolio and your client's overall portfolio?

   d) Draw the CAL of your portfolio on an expected return/standard deviation diagram. What is the slope of the CAL? Show the position of your client on your fund's CAL.

3. **CH.5.13** Suppose the same client in the previous problem decides to invest in your risky portfolio a proportion (y) of his total investment budget so that his overall portfolio will have an expected rate of return of 15%.

   a) What is the proportion y?

   b) What are your client's investment proportion in your three stocks and the T-bill fund?

   c) What is the standard deviation of the rate of return on your client's portfolio?

4. **CH.5.14** Suppose the same client as in the previous problem prefers to invest in your portfolio a proportion (y) that maximizes the expected return on the overall portfolio subject to the constraint that the overall portfolio's standard deviation will not exceed 20%.

   a) What is the investment proportion y?

   b) What is the expected rate of return on the overall portfolio?

5. **CH.5.18** You manage an equity fund with an expected risk premium of 10 % and an expected standard deviation of 14%. The rate of Treasury bills is 6%. Your client chooses to invest $ 60,000 of her portfolio in your equity fund and $40,000 in a T-bill money market fund. What is the expected return and standard deviation of return on your client's portfolio?

6. **CH.5.19** What is the reward-to-volatility ratio for the "equity fund" in the previous problem?

7. **CH.5.CFA.4** Suppose an investor's utility function has the following form: $U = E(r)-0.5A\sigma^2$

Investment	***Expected Return***	***Standard Deviation***
1	.12	.30
2	.15	.50
3	.21	.16
4	.24	.21

   a) Based on the utility function and the data above, which investment would you select if the coefficient of risk aversion is equal to 4? (Show all the necessary calculations)

   b) Based on the utility function and the data above, which investment would you were risk neutral? (Show all the necessary calculations)

8. Using the data from the previous problem and assuming returns are normally distributed, which investment would you chose if your objective was to minimize VaR at 5% probability level? (Show all the necessary calculations)

9. ***The Myth of the Rational Market*, Chapter 2 Question:** In his 1938 study, what explanation did Fred Macaulay offer for the business cycle?

10. ***The Myth of the Rational Market*, Chapter 3 Question:** What line of war-time work of Harry Markowitz helped give him the mathematical preparation needed to develop his theory of optimal portfolio diversification?