

Assignment #1

- Answer all question (Total: 80 points).
 - You are not required to type up your answers, but please write neatly and legibly.
 - **Show all your work.** While getting the correct answers is important, I am more interested in knowing HOW you obtain the answers. No marks will be given for correct answers without the proper set-up and all the steps.
 - This assignment is due in class on **April 21, 2010**.
 - A 20% penalty will be assessed for any late submissions within seven days, and no assignments will be accepted after April 28, 2010.
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1. (12 points) The following table shows the yields of U.S. Treasuries on April 1, 2010

Maturity	1 yr	2 yr	3 yr	5 yr	7 yr
Yield	0.42	1.05	1.63	2.59	3.32

Assume that the Pure Expectations Theory holds.

- a. What is the expected yield of a 1-year Treasury two years from now?
- b. What is the expected yield of a 2-year Treasury three years from now?

Suppose the term premium on a three year bond is estimated to be 0.25%.

- c. What is the expected yield of a 1-year Treasury two years from now according to the liquidity premium theory?
2. (10 points) Two stores have the same list price of \$12,000 for a HDTV you are interested in. Store A offers a payment plan of \$2,000 down payment and the balance to be paid in two equal annual installments beginning next year with no finance charge. Store B offers a plan with no money down and three equal annual payments of \$4,000 beginning next years, also with no finance charge. Assume that the market interest rate is 4%. Which store offers a better deal? Show all your work and explain.
3. (24 points) You open an investment account with \$5,000 today ($t = 0$) to save for the down payment on a house. Your will make four additional deposits on the same day in the next four years. Following your brother's suggestion, you will increase the amount of deposit by 10 percent each year.

- (8) a. Draw a clear and accurate Time Line of your financial plan.

- (8) b. Suppose the account pays 12% interest per year, compounded quarterly. How much money will you have in your account at the end of the fifth year?

Once you saved enough money for the down payment, you plan to take out a 10-year mortgage of \$400,000 from a bank to finance the house payments.

- (8) c. If the mortgage rate is 6%, how much will your monthly mortgage payment be?
4. (10 points) Consider a bond which has 10 years until maturity, a coupon rate of 6.0%, makes semi-annual payments, and a YTM of 7.5%.
- Show that the price of this bond is \$895.778.
 - Suppose you bought this bond and sold it a year later for \$928.938. What is your rate of return on this bond?
5. (8 points) Consider an 8-year **zero-coupon bond** with a \$1,000 par value and 3.5% yield to maturity. If interest rate rises to 5% a year later, will the price of this bond increase or decrease? By how much?
6. (16 points) Consider a portfolio of two stocks, *A* and *B*. The rate of return on the two stocks depends on three possible states of the economy. The probability of each state occurring and rates of return for Stocks *A* and *B* associated with each state are estimated as follows:

Economy	Prob.	<i>A</i>	<i>B</i>
Boom	0.1	15.6%	25.3%
Normal	0.6	10.5%	6.4%
Recession	0.3	6.3%	-3.7%

- Find the expected return on each stock.
- Find the standard deviation of return on each stock.
- Find the covariance and the correlation of returns between the two stocks.