PROBLEM SET 3

Due on Monday, April 24th 2006

To get credit for this problem set, it must be handed in on Monday, April 24 in the discussion section.

Late homework will not be accepted.

1. Exercises

5.5, 5.7, 5.10, 5.11 of Chapter 5 in textbook. Before doing exercise 5.11 please read carefully the section called “Bond Market Reporting.” Also for exercise 5.11, do more than just answering the question “Which of the following statements is false.” For each statement, indicate if it is correct or false and explain why.

2. Felicity Foresight and taxes on interest income

First, read “The Foresight Saga” in The Economist (Dec 16, 1999), available on the course website under “Readings”.

As the text says, one of the simplifications made is the assumption that no taxes are paid on dividend and interest income or on capital gains. Figures change considerably once taxes are taken into account. The following exercise serves as an example (adapted from Bodie, Kane and Markus. 1993. Investments).

Suppose that you have a one-year investment horizon and are trying to decide between the following two bonds: a zero-coupon and a coupon bond. Both mature in 20 years. The zero-coupon bond pays $1,000 at maturity. For simplicity, assume that the coupon bond, which has a 10 percent coupon rate, pays the $100 coupon once each year. Assume that this coupon payment is considered as income for tax purposes. Both bonds now offer yields to maturity of 10 percent before taxes.

1. What are the selling prices of the two bonds today?

2. Assume that the tax bracket on personal income is 30%. Compute the after-tax rate of return on each of the bonds at the end of period 1.

(a) Hint #1: for the coupon bond, first compute the income received at the end of period 1. How much you should pay in taxes and what is you net return? (Note that the selling price at the end of period 1 of the coupon bond is still its face value, why?)

(b) Hint #2: for the zero-coupon bond, what is the selling price at the end of period 1? How much do you gain/lose before taxes as a percentage of the initial price? Note that the IRS treats this gain as “imputed interest” and therefore taxes it. So, how much do you gain/lose after taxes?