BUS312: Introduction to Corporate Finance

Assignment #7

Question #1

Consider a 10 year bond that makes annual coupon payments. The bond has just made a coupon payment. The next and upcoming coupon is in exactly one year. The coupon rate on the bond is 6% per annum (compounded once per year). The yield on the bond is 8% per annum (compounded once per year). The par-value is $10,000. Find the current yield (annual coupon/current price). Explain why the current yield is greater or lesser than the yield to maturity.

Question #2

In planning for your retirement -- twenty five years from today -- you are considering an investment today into *one of two* bonds:

i. A twenty-five year 12% per annum coupon rate bond (paid semi-annually). There are 50 remaining coupons and the upcoming coupon is in exactly six months. Par is $1,000.
ii. A bond that pays no coupons but only a lump sum amount (the face amount) in exactly 25 years (i.e., a zero coupon bond).

Prices of both bonds are $1,429.644 and they both yield 8% per annum compounded semi-annually. If you buy bond (i) you expect to be able to reinvest coupons at 8 percent per annum compounded semi-annually until your retirement.

Required: If your objective is to have the most money possible for your retirement, which bond is the better buy (other things equal)?

Question #3

Consider two bonds selling in the secondary bond market. Both make equal annual coupon payments. One bond has five years to maturity, the other has ten years to maturity. The maturity values of both bonds (i.e., the par value) are $1,000. Both bonds have just made an interest payment. The next and upcoming coupon on both bonds is in one year. You may assume a flat term structure of interest rates (i.e., the per annum rate of interest for an investment of any term is the same). Notice that there are more cash-flows on the 10 year bond compared to the five year bond. Nonetheless, demonstrate with a numerical example of your choosing, that when

these bonds trade at a discount, the value of the 5 year bond exceeds the value of the 10 year bond.

Question #4

You have just purchased a newly issued $1,000 five year ABC Company bond at par. The fixed coupon rate is 8% paid semi-annually (the next receivable coupon is exactly six months from today). You are considering buying another ABC company bond (another issue with possibly different features and terms). This second bond has been outstanding for some time now and it trades in the secondary market. The second bond has 5.5 years remaining to maturity, has a fixed coupon rate of 6% paid *annually* (next receivable coupon in *six months*), and has a par value of $1000.

a. What is the yield to maturity on the five year bond?
b. Employ the rate you calculated in (a) (in an appropriate manner) to value the 5.5 year bond.

Question #5

A zero coupon bond is a bond that pays no coupons, but simply promises to make a lump-sum payment in the future. Zero coupon bonds are sold at a discount at issue.

a. Is it possible for a zero coupon bond to sell at a premium? Explain.
b. Are the prices of zero coupon bonds more or less sensitive to interest changes than a bond with identical par-value and maturity but with positive coupons? (All other factors are presumed equal, including default risk). Explain.
c. Is the price of a short-term or a long-term zero coupon bond more sensitive to interest rate changes? Explain.
d. If the price of a zero coupon bond is the same next year as it is today, what has happened to interest rates? Explain.

Question #6

Suppose that you purchase a 25 year, 10% per annum coupon rate bond when its yield to maturity is 7% per annum compounded semi-annually. Par value is $10,000. Coupons are paid every six months and the next and upcoming coupon is in exactly six months. You buy the bond today and plan to hold it for exactly 5 years (you will sell the bond in exactly five years immediately after receiving the coupon at that time). You expect to reinvest coupons at a rate of interest of 7% per annum compounded semi-annually. You do not expect yields in the bond market to increase or decrease over your five year holding period. Yields for 20 years bonds

are no different from yields for 25 year bonds. Find your annualized holding period rate of return on your investment compounded semi-annually.