

**FIN 3560**  
**Financial Markets and Instruments**

**BOND PROBLEMS**

I. Bonds and Pricing:

- A. What is the price today of a 9 year, 8% annual coupon bond if the interest rate is 6%, compounded quarterly?
- i. If you buy the bond above, and you sell it in one year, how much money will you have next year assuming the interest rate doesn't change?
  - ii. If you buy the bond above, and you sell it in four years, how much money will you have four years from now assuming the interest rate doesn't change? Assume you reinvested the coupons.
  - iii. If you buy the bond above, and you sell it in five years and three months from now, how much money will you have at that time assuming the interest rate doesn't change? Assume you reinvested the coupons.
  - iv. Assume now that you buy the bond above, but that the interest rate changes to 7% EAR the day after you bought it:
    1. If you sell it in four years, how much money will you have, assuming you reinvested the coupons at the new rate?
    2. If you sell it in five years and three months from now, how much money would you have assuming you reinvested the coupons?

II. Forward Rates

Assume the following rates (expressed as an EAR) on US Treasury Strips:

<u>Time</u>	<u>rate</u>	<u>Time</u>	<u>Rate</u>
3 months	1.5%	2 year	4.0%
6 months	2.0%	2.5 year	4.25%
9 months	2.4%	3 year	4.5%
1 year	3.0%	4 year	5.0%
1.5 year	3.5%	5 year	6.0%

- A. What is the one year forward rate from year one to year two?
- B. What is the three month forward rate from three months to six months?
- C. What is the one year forward rate from six months to 1.5 years from now?
- D. What is the 1.5 year forward rate from one year to 2.5 years from now?
- E. Under the unbiased expectations hypothesis, what do you expect the three year interest rate to be two years from now?
- F. What is the lowest rate you could reasonably see for a six year bond based on the rates above?