

MATH 2600/STAT 2600, Theory of Interest

FALL 2014

Toby Kenney

Homework Sheet 4

Due: Thursday 6th November: 11:30 PM

1. Calculate the price that should be paid for each of the following bonds to obtain the desired yield:
  - (a) Face value \$150,000, maturing at par in 8 years, coupon rate  $j_2 = 3\%$ , desired yield  $j_2 = 4\%$ .
  - (b) Face value \$110,000, maturing at par in 8 years, coupon rate  $j_2 = 6\%$ , desired yield  $j_2 = 4\%$ .
2. At what interest rate would the two bonds in Question 1 have the same present value?
  - (i)  $j_2 = 16.10\%$
  - (ii)  $j_2 = 17.43\%$
  - (iii)  $j_2 = 19.82\%$
  - (iv)  $j_2 = 21.35\%$
3. (a) Write out a complete bond amortisation schedule for a bond with face value \$20,000 with coupon rate  $j_2 = 3\%$ , maturing at par in 4 years, sold to an investor who wishes to receive a yield of  $j_2 = 7\%$   
(b) Write out a complete bond amortisation schedule for a bond with face value \$25,000 with coupon rate  $j_2 = 5.5\%$ , maturing at par in 4 years, sold to an investor who wishes to receive a yield of  $j_2 = 3\%$
4. A bond has face value \$24,000, maturity in 12 years, coupon rate  $j_2 = 5\%$ . After 2 years and 8 months, it is sold to a bank, who wish to receive a yield of 5.8%. Calculate
  - (a) The flat price.
  - (b) The quoted price.
5. Mrs. Wood buys a bond with face value \$65,000, maturing at par in 13 years, with coupon rate 2%, for a price to yield  $j_2 = 4.1\%$ . After 4 years, interest rates decrease, and she sells the bond to Mr. Young, who wishes to receive a yield of  $j_2 = 3.7\%$ .
  - (a) What is Mrs. Wood's rate of return?
    - (i)  $j_2 = 4.22\%$
    - (ii)  $j_2 = 4.88\%$
    - (iii)  $j_2 = 5.06\%$
    - (iv)  $j_2 = 5.25\%$

(b) How much would interest rates need to have decreased for Mrs. Wood to achieve a  $j_2 = 6.2\%$  rate of return?

(i)  $j_2 = 2.89\%$

(ii)  $j_2 = 3.03\%$

(iii)  $j_2 = 3.24\%$

(iv)  $j_2 = 3.47\%$