

MATH 373

Quiz 6

Fall 2018

November 29, 2019

1. Liu Life Insurance Company has promised to pay Fang a payment of 500,000 at the end of 8 years.

Liu Life Insurance Company wants to immunize the payment to Fang by investing the following two assets:

- i. Asset A is a zero coupon bond maturing for 10,000 at the end of 2 years.
- ii. Asset B is a zero coupon bond maturing for 10,000 at the end of 10 years.

At an annual effective interest rate of 7%, calculate the number of each bonds that Liu should buy. (Assume that you can buy partial bonds.)

2. Shikun is the recipient of an annuity that will pay the following:
 - i. 100,000 today;
 - ii. 200,000 at the end of two years; and
 - iii. 300,000 at the end of four years.

Calculate the Macaulay Convexity of Shikun's payments at an interest rate of 4%.

3. A 20 year bond matures for its par value of 10,000. The bond pays annual coupons at a rate of 7%.

Calculate the Modified duration of the bond using an interest rate of 5%.