

homework2 porblem 1

Jiaqi Li

October 6, 2018

1. Assume that spot rates are as follows:

Maturity	Spot Rate
1	5%
2	5.5%
3	6%
4	6.3%

Spot rates are with annual compounding, coupon payments are annual, and par values are \$100. Compute the prices of the following bonds:

- (a) A zero-coupon bond with 3 years to maturity.

$$\frac{100}{(1 + 0.06)^3} = 83.96$$

The price of such a zero-coupon bond is 83.96.

$$\frac{100}{(1 + \text{ytm})^3} = 83.96$$

Solve and we get ytm = 0.06

- (b) A bond with coupon rate 6% and 2 years to maturity.

$$\frac{6}{(1 + 0.05)} + \frac{106}{(1 + 0.055)^2} = 100.95$$

The price of such a coupon bond is 100.95.

$$\frac{6}{(1 + \text{ytm})} + \frac{106}{(1 + \text{ytm})^2} = 100.95$$

Solve and we get ytm = 0.0548.

- (c) A bond with coupon rate 8% and 4 years to maturity.

$$\frac{8}{(1 + 0.05)} + \frac{8}{(1 + 0.05)^2} + \frac{8}{(1 + 0.05)^3} + \frac{108}{(1 + 0.05)^4} = 106.11$$

The price of such coupon bond is 106.11.

$$\frac{8}{(1 + \text{ytm})} + \frac{8}{(1 + \text{ytm})^2} + \frac{8}{(1 + \text{ytm})^3} + \frac{108}{(1 + \text{ytm})^4} = 106.11$$

Solve and we get ytm = 0.0623