

PROBLEM SET: Bond Pricing

Exercise 1. [2]

A bond has a face value of 1,000. The bond pays 8% semi-annual coupon and has two years left to maturity. The semi-annually compounded yield to maturity on similar bonds is currently 12%.

What is the price of the bond?

- (a) 795.52
- (b) 826.44
- (c) 930.70
- (d) 947.93
- (e) I choose not to answer.

Exercise 2. *Dr No's Bond* [4]

Dr No owns a bond, serial number 007, issued by the James Company. The bond pays \$100 for each of the next three years, at which time it is retired and pays its face value of \$1000.

- (a) How much is the James' bond 007 worth to Dr No at an interest rate of 10%?
- (b) How valuable is James bond 007 at an interest rate of 5%?

Ms Yes offers Dr No \$1,100 for the James bond 007.

- (c) Should Dr No say yes or no to Ms Yes if the interest rate is 10%?
- (d) What if the interest rate is 5%?

In order to destroy the world, Dr No hires Professor Know to develop a nasty zap beam. In order to lure Professor Know from his cushy-soft university position at Jail university, Dr No will have to pay the professor \$100 a year. The nasty zap beam will take three years to develop, at the end of which it can be built for \$1000.

- (e) If the interest rate is 5%, how much money will Dr No need to finance this dastardly program?
- (f) If the interest rate was 10%, would the world be in more danger or less danger from Dr No?

Exercise 3. *Bond* [2]

A 10-year bond is issued with a face value of \$1,000, paying interest of \$60 a year. If market yields increase shortly after the T-bond is issued, what happens to the bond's

1. Coupon Rate?
2. Price?
3. Yield to Maturity?

Exercise 4. [2]

A bond is currently priced at $B_0 = 97.5563$. The bond has an annual coupon of 10% (with discrete, annual compounding), a face value of 100, and a time to maturity of 3 years.

1. If the current (annual, discretely compounded) interest rate decreases by one percentage point, what is the new bond price?

Exercise 5. [2]

What is the price of a 5-year bond with a nominal value of \$100, a yield to maturity of 7% (with annual compounding frequency), a 10% coupon rate and an annual coupon frequency.

Exercise 6. [2]

What is the yield to maturity on a 5-year bond with a nominal value of \$100, a 10% coupon rate, an annual coupon frequency and a price of 97.856?