Bonds

1. Introduction

2. Bond Alphabet Soup and the Basic Price Formula

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2 Bond Alphabet Soup and the Basic Price Formula

Vocabulary

Assignment: Read thoroughly Section 6.1

- Bonds are financial products that are issued by and can be purchased from a government bureau or a financial company that guarantees future payments
- The time of purchase of the bond is called the issue date
- The life of a bond is **finite**; there is a maturity date (or redemption date) when the last payment occurs
- The maturity date is fixed, but there may be a stipulation that the bond may be **called** earlier and the redemption amount must be given to the holder of the bond; such bonds are referred to as callable bonds
- The term of the bond is the interval between the issue date and the maturity date (or the length of that interval, depending on the context)

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More vocabulary

- Zero-coupon bonds (or pure discount bonds) have only a single payment at the fixed maturity date]
- The bonds that have intermediate payments are called coupon bonds
- The time periods between two consecutive payments that occur before maturity are referred to as coupon periods
- The indenture is the legal document (contract) that specifies all of the above

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What's printed on the bond?

- F . . . the face (or par) value of a bond
- The par value is used to calculate **the size of the coupon payments**
- Assume that m is the number of coupons issued during a year and that α is the nominal rate convertible m times per year; then, $r = \alpha/m$ is the effective rate per coupon period
- Then, the amount of a coupon payment equals

$$Fr = \frac{F\alpha}{m}$$

- *Caveat:* **Both** α and r can be referred to as coupon rates

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Modified coupon rate

- n . . . the number of coupon periods in the term of a bond
- So, if a bond is an $N-$year bond, then $Nm = n$
- C . . . the redemption amount
- **IF** $C = F$, then the bond is called a par-value bond (or redeemable at par)
- *Convention:* If it is not specified otherwise, one should assume that $F = C$
- g . . . the modified coupon rate, i.e.,

$$g := \frac{Fr}{C}$$

- Note that the coupon amount equals $Fr = Cg$

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Investor's effective yield rate

- i . . . the investor's effective yield rate **per year**
- j . . . the investor's effective yield rate **per coupon period**
- v_j . . . the discount factor per coupon period, i.e.,

$$v_j = \frac{1}{1+j}$$

- G . . . the base amount, i.e.,

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Basic price formula

- K . . . the value of the redemption amount at the issue date, i.e.,

$$K = Cv_j^n$$

- P . . . the price paid for the bond by the investor if j is the desired yield rate per period, i.e.,

$$P = (Fr) \cdot a_{\overline{n}|j} + Cv_j^n = (Fr) \cdot a_{\overline{n}|j} + K$$

- All the notation is collected in Table 6.2.4 in the book - keep it handy as you do the problems until you get used to all the vocabulary and notation . . .
- *Assignment:* Do **all** the examples is Section 6.2.

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