

## **REVIEW OF BOND VALUATION**

### **WHAT WILL YOU LEARN?**

- Basic principle of valuation of any financial asset

## WHAT WILL YOU LEARN?

- ▶ Learn key features of a bond issue
- ▶ Find the value of a zero-coupon bond
- ▶ Find the value of coupon bond
- ▶ Compute the yield to maturity of a bond

## BOND PRICING: KEY FEATURES

- ▶ A bond (or a fixed income instrument) is a promissory note that specifies exactly the (promised) future cash flows it pays.

## BOND PRICING: CASH FLOWS

- ▶ Two types of cash flows
  - ▶ **Principal** (called **face value = F**) at maturity
  - ▶ Amount returned to bondholders at maturity
  - ▶ Face value also called par value, typically \$1,000 for corporate debt
- ▶ Periodic cash flows (called **coupons = C**)
  - ▶ Percentage of face value
  - ▶ Coupons are usually paid semi-annually.

## ZERO-COUPON BOND VALUATION

- ▶ Zero-coupon bonds have only single cash flow which is equal to the face value at maturity.
- ▶ The value of a zero-coupon is simply the discounted value of the single cash flow at maturity at time T.

## **ZERO COUPON BOND VALUATION: EXAMPLE**

- ▶ One-year zero-coupon bond with a face value of \$10,000 is sold in a market where the one-year discount rate is 5.35%. What is the market value of the bond?

## **YIELD TO MATURITY**

- ▶ Conversely, we can ask what rate of return the bond promises, given the bond's promised cash flows and the current bond price.
- ▶ **Yield-to-maturity (YTM) = single interest rate that sets the price equal to the present value (IRR)**

## YIELD TO MATURITY EXAMPLE

- ▶ Suppose a 20-year zero-coupon bond with a face value of \$1,000,000 is selling for \$455,500. What is the yield to maturity on this bond?

## COUPON BONDS

- ▶ Bonds often make periodic payments – coupon payments. For example, U.S. bonds typically make semiannual bonds.
- ▶ The coupon rate is expressed as a percentage of the face value. Remember this is just a way of telling us what the periodic cash flows are.

## COUPON BOND VALUATION: EXAMPLE

- ▶ A 2-year bond with a face value of \$1,000, a coupon rate of 12% and semi-annual coupon payments is sold in a market where the 12-month discount rate is 5.35%, compounded semiannually. What is the market value of the bond?

## SUMMARY

- ▶ Learn key features of a bond issue
- ▶ Find the value of a zero-coupon bond
- ▶ Find the value of coupon bond
- ▶ Compute the yield to maturity of a bond