Chapter Preview : Chapter 6

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1. Define following terms:
    a. **pure discount bond** : A pure discount bond is a type of bond that pays no periodic interest payments. Instead, it is issued at a discount to its face value and redeemed at face value at maturity. The return to the investor comes from the difference between the purchase price and the face value.
    b. **coupon bond :** A coupon bond is a type of bond that pays periodic interest payments (coupons) to the bondholder based on the bond's face value or par value. These interest payments are typically made semi-annually or annually until the bond's maturity date when the face value is repaid.
    c. **coupon rate :** The coupon rate is the fixed interest rate that a bond issuer pays to bondholders. It's expressed as a percentage of the bond's face value and determines the amount of interest the bond will pay annually or semi-annually. For example, a bond with a face value of $1,000 and a coupon rate of 5% will pay $50 in interest annually.
    d. **yield-to-maturity :** The yield-to-maturity is the total return anticipated on a bond if it is held until it matures. It takes into account the bond's current market price, par value, coupon interest rate, and the time remaining until maturity. YTM is often expressed as an annual percentage rate and is a crucial measure for comparing the relative attractiveness of different bonds.
    e. **credit risk :** Credit risk, also known as default risk, refers to the risk that a borrower (typically a bond issuer) will default on its debt obligations, failing to make timely payments of interest and principal to bondholders. Bonds with higher credit risk generally offer higher yields to compensate investors for the increased risk of default.
    f. **default spread :** Default spread is the difference in yield between a risk-free asset (usually government bonds) and another debt security with

similar maturity but higher credit risk. It reflects the additional yield investors demand to compensate for the higher risk of default associated with the non-risk-free security.

2. If an interest rate falls, what happens to the bond price and why?

   The amount the investor receives when the bond matures is the same. Therefore, a lower interest rate means that the price of bonds rises, and a higher interest rate means that the price of bonds falls.

3. Explain the differences between par, premium, and discount Bonds.

   a. **Par Bond**:

      - A par bond is a bond whose price equals its face value or par value.
      - When the coupon rate of a bond is equal to the prevailing interest rate in the market, the bond is said to be trading at par.
      - For example, if a bond has a face value of $1,000 and a coupon rate of 5%, it will be priced at $1,000 when the prevailing interest rate in the market is also 5%.

   b. **Premium Bond**:

      - A premium bond is a bond that is priced higher than its face value.
      - This occurs when the bond's coupon rate is higher than the prevailing interest rate in the market.
      - Investors are willing to pay a premium for the higher coupon payments.
      - For example, if a bond has a face value of $1,000 and a coupon rate of 6%, but prevailing interest rates have fallen to 4%, investors will pay more than $1,000 to receive the higher coupon payments.

   c. **Discount Bond**:

      - A discount bond is a bond that is priced lower than its face value.
      - This happens when the bond's coupon rate is lower than the prevailing interest rate in the market.
      - Investors are willing to purchase the bond at a discount because they will receive lower coupon payments compared to the prevailing

interest rates.

- For instance, if a bond has a face value of $1,000 and a coupon rate of 3%, but prevailing interest rates have risen to 5%, investors will pay less than $1,000 for the bond due to the lower coupon payments.

4. Solve the following problems in the text book;
    a. (5.12) Capital One is advertising a 60-month, 6.15% APR motorcycle loan. If you need to borrow $11,000 to purchase your dream Harley Davidson, what will your monthly payment be?
        - =PMT(6.15%/60, 60, 8000) = $ 137.54
    b. (5.35) Your uncle Fred just purchased a new boat. He brags to you about the low 6.9% interest rate (APR, monthly compounding) he obtained from the dealer. The rate is even lower than the rate he could have obtained on his home equity loan (7.9% APR, monthly compounding). If his tax rate is 27% and the interest on the home equity loan is tax deductible, which loan is truly cheaper?
        - The loan from the dealer is 6.9% (APR, monthly compounding) and the loan he could have obtained on his home equity considering tax decuctible is 5.8%. As a result, home equity loan is truly cheaper.