**Chapter Preview: Chapter 5 & 6**

1. **What is the difference between nominal and effective interest rate?**

* **Nominal interest rate** is the stated rate of interest on a loan or investment. For example, if you borrow $1,000 at a nominal interest rate of 10%, you will be charged $100 in interest per year.
* **Effective interest rate**, on the other hand, is the true cost of borrowing or the true return on investment after taking into account the compounding of interest. For example, if you borrow $1,000 at a nominal interest rate of 10% per year, but the interest is compounded quarterly, then the effective interest rate will be higher than 10%

1. **For a nominal interest rate of 12% per year, determine the nominal and effective rates per year for (a) quarterly, and (b) monthly compounding.**

* (a) The nominal rate per quarter is 12% divided by 4, which is **3%**. Effective rate per quarter = (1 + (0.12 / 4))^4 – 1 = 0.1236 or 12.36%. Effective rate per year = (1 + 0.1236)^4 - 1= 0.5371 or 53.71%. Therefore, nominal rate per quarter is 3% and effective rate per year is 53.71%
* (b) The nominal rate per month is 12% divided by 12, which is 1%. Effective rate per month = (1 + (0.12 / 12))^12 – 1 = 0.1268 or 12.68%. Effective rate per year = (1 + 0.1268)^12 – 1 = 0.1557 or 15.57%. Therefore, nominal rate per month is 1% and the effective rate per year is 15.57%

1. **Define continuous compound interest.**

* We compound the interest every instant.
* This calculation assumes that the interest is being compounded infinitely, which means that it happens all the time.

1. **Briefly explain following terms:**

* **Amortizing loans**
* each month you pay interest on the loan plus some part of the loan balance. Usually, each

monthly payment is the same, and the loan is fully repaid with the final payment.

* **Real Interest rate**
* The rate of growth of your purchasing power, after adjusting for inflation, is determined by the real interest rate.
* Rr = r-i/1+I
* **Term structure**
* The relationship between the investment term and the interest rate is called the term structure of interest rates.
* **Yield curve/ inverted yield curve**
* can plot this relationship on a graph called the yield curve
* **Cost of capital**
* Use this as a discount rate for evaluating the cash flow.
* the best available expected return offered in the market on an investment of comparable risk and term to the cash flow being discounted.

1. **Define the following terms:**

* **Pure discount bond**
* zero-coupon bond, which does not make coupon payments.
* zero-coupon bonds trade at a discount (a price lower than the face value), so they are also called pure discount bonds.
* **Coupon bond**
* coupon bonds pay investors their face value at maturity
* Treasury notes and Treasury bonds.
* **Coupon rate**
* The amount of each coupon payment is determined by the coupon rate of the bond. This coupon rate is set by the issuer and stated on the bond certificate. By convention, the coupon rate is expressed as an APR
* **Yield-to-maturity**
* The IRR of an investment in a bond is given a special name, the yield to maturity (YTM).
* The yield to maturity of a bond is the discount rate that sets the present value of the promised bond payments equal to the current market price of the bond.
* **Credit risk**
* Corporate bonds, it might not pay back the full amount promised in the bond prospectus.

This risk of default, which is known as the credit risk of the bond, means that the bond’s cash flows are not known with certainty.

* **Default spread**
* refer to the difference between the yields of the corporate bonds and the Treasury yields as the default spread

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

* When interest rates fall, bond prices generally rise = Inverse relationship
* lower interest rates make existing bonds with higher coupon rates more attractive to investors, who are willing to pay a premium to buy them, driving up their prices.

1. **Explain the differences between par, premium, and discount bonds.**

* Par bonds are issued at their face value, meaning that the price at which they are sold is equal to their nominal or face value.
* Premium bonds are issued at a price higher than their face value, usually because the coupon rate on the bond is higher than the prevailing interest rates. Investors are willing to pay a premium for these bonds because they offer higher returns than other bonds.
* Discount bonds are issued at a price lower than their face value, usually because the coupon rate on the bond is lower than the prevailing interest rates. Investors are willing to buy these bonds at a discount because they offer lower returns than other bonds.
* The difference between the price at which a bond is issued and its face value is known as the bond's "yield," which is the rate of return an investor will earn on the bond over its lifetime. Par bonds have a yield equal to their coupon rate, while premium bonds have a yield lower than their coupon rate, and discount bonds have a yield higher than their coupon rate.