Chapter -Three

Valuation of Financial Instruments & Cost of Capital

Learning Outcomes:

- *After studying this chapter you will be able:*
  - ✓To appreciate one of the main applications of the concept of the **time value of money,**
  - ✓Types of Bonds: Identify the major types of corporate bonds.
  - ✓To differentiate among a **bond, a preferred stock, and a common stock,**
  - ✓To identify the basic inputs in valuation of a financial asset,
  - ✓To understand the techniques of computing the value of a bond, a preferred stock, and a common stock,

Con't…

- ✓ **Valuing Corporate Debt:**
  - Calculate the value of a bond and relate it to the yield to maturity on the bond.
- ✓ **Bond Valuation: Four Key Relationships:**
  - Describe the four key bond valuation relationships.
- ✓ **Common Stock:**
  - Identify the basic characteristics and features of common stock and use the discounted cash flow model to value common shares.
- ✓ **Preferred Stock:**
  - Identify the basic characteristics and features of preferred stock and value preferred shares.
- ✓ **To be able to interpret the values of financial assets,**

Con't…

- Understand the basic concept and sources of capital associated with the **cost of capital.**
- Define the overall "**cost of capital**" of the firm.
- Determine the cost of long-term debt, and explain why the after-tax cost of debt is the relevant cost of debt.
- Determine the cost of preferred stock.
- Calculate the cost of common stock equity, and convert it into the cost of retained earnings and the cost of new issues of common stock.
- Calculate the firm's weighted average cost of capital (WACC) and understand its rationale, use, and limitations.

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- Bond Valuation
- *Types Of Bonds*
- Basic Bond Valuation Model
- Bond Valuation: Four Key Relationships
- Valuation Of Shares
- Valuation Of Preference Stocks
- Characteristics Of Preferred Stock

Con't…

- **Common Stock Valuation**
- **Common Stock Valuation Models**
- ***Cost of Capital***
- **Meaning of Cost of Capital**
- **Basic Definitions/Terms**
- **The Cost of Debt**
- **The cost of Preferred Stock**
- **The Cost of Common Equity**
- **Weighted Average Cost of Capital (WACC)**

Introduction

- **A**ssets can be **real or financial**; securities like shares and bonds are called *financial assets* while physical assets like plant and machinery are called *real assets*.

- **Financial Assets/securities** are simply pieces of papers with contractual provisions that entitle their owners/holder to specific **rights and claims** on specific cash flows or values.

- A **security is a document that gives the owner**/holder **a claim on future cash** flows.

- A security may represent an **ownership claim** on an asset (such as a share of stock) or a claim on the repayment of borrowed funds, with interest (such as a bond).

What is Value?

- **In general, the value of an asset is:**
  - **The price that a willing and able buyer pays to a willing and able seller**

Con't....

- **Valuation** is the process of determining the worth of any asset whose value is obtained from **future cash flows.**

- The value of any asset in **finance is the present value** of **all future cash flows** it is expected to provide over the relevant time period. This value is called **intrinsic value.**

- **Valuation of Financial Assets**: is the process of estimating the value of financial assets (bonds, preferred stocks and common stocks)

Theory of Valuation

- The value of an asset is the **present value of its expected returns.**

- You expect an asset to provide a stream of returns while you own it

- To convert this stream of returns to a value for the security, you must **discount** this stream at your **required rate of return.**

Con't…

- **Key Inputs:**
- The **intrinsic value** of an asset is determined based on three **basic inputs:**
  I. Cash flows (returns),
  II. Time pattern of the returns, and
  III. The discount rate/Required Rate of Return **(RRR) (RISK) … the greater the risk of the cash flow (CF) the lower its value …**
     - **CAPM: the greater the risk the greater the RRR (Discount rate)**

BOND VALUATION

- **Bond** is a long-term debt instrument or security issued by businesses and governmental units to raise large sums of money.
- A **bond** is a long-term contract under which a borrower agrees to make payments of **interest and principal**, on specific dates, to the holders of the bond.
- Investment in a bond provides two types of cash flows:
  - ✓ One is the **periodic interest payment** by the issuing party.
  - ✓ Another is the **price paid to the investor upon maturity** which is **the Face Value of the Bond**.

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- The first, i.e., the interest payment is based on the **par value** of the bond and the **coupon interest rate.**

- The **par value** is the face value of the bond which will be paid to the investor upon maturity.
  - **Par value is also called maturity value.**
- Most **bonds** are distinguished from **bank loans** by the existence of a **secondary market**.
  - **Bonds** are bought and sold among individual investors after they are initially issued by the firm. Thus if the holder of a corporate bond no longer wishes to keep the bond (i.e., no longer wishes to be a creditor of the firm), then he can simply sell the bond to another investor in the bond market.

Common Terms

- Principal, Face/Maturity/Par Value: borrowed and promised to repay at future date, often at maturity.
  - ***Par Value:*** It is the price at which the bond will be redeemed by the issuing company at the end of the life of the bond.
  - Maturity value is the amount payable to an investor at the end of a debt instrument's holding period (maturity date).

- **Coupon Interest Rate**- is the rate of interest paid on the bond's par value.
  - The **periodic interest** rate that is expressed as a percentage of the face value of the bond.
- **Coupon payment**- is the interest payment made on a bond; it is equal to ***par value X coupon rate***.
  - ✓ For example if the Par value is $1,000 and the coupon rate is 10% then, the coupon amount is $100 ($1,000 x 10%) per year.

Con't…

- **Maturity period-** is the number of years after which the par value is payable to the bondholders.
  - **maturity date/ period** refers to the date on which the bond issuer must repay the principal or the par value to the bondholder.
- ***Market Value:*** is the bond's current price or it is the price at which bonds are trading in the market place.
- ***Yield to maturity:*** It is the single discount factor that makes present value of future cash flows from a bond equal to the current price of the bond.

YTM is the bond's required rate of return, which an investor can expect to earn if the bond is held till maturity.

Who Issues the Bonds?

- Investors have many choices when investing in bonds, but bonds are classified into four main types: **Treasury, corporate, municipal, and foreign.**

Treasury bonds

- A treasury bond is a bond issued by the Central Government.
- These are considered safe investments because they are backed by **taxing authority of the Central government**.
- The interest on Treasury bonds is not subject to state income tax.

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Corporate bonds

- **Corporate bonds** as the name implies, are issued by **corporations.**
- Unlike Treasury bonds, corporate bonds are exposed to **default risk—if** the issuing company gets into trouble, it may be unable to make the promised **interest and principal payments.**

- **Default risk** is often referred to as "**credit risk**," and, the larger the default or credit risk, the higher the **interest rate the issuer must pay.**

Con't…

Municipal bonds, or "munis,"

- Municipal bonds are issued by **state and local governments**.

Foreign bonds

- Foreign bonds are issued by foreign governments or foreign corporations.
- Foreign corporate bonds are, of course, exposed to **default risk**, and an additional risk exists if the bonds are denominated in a currency other than that of the investor's home currency.
- For example, if you purchase corporate bonds denominated in Japanese yen, you will lose money—even if the company does not default on its bonds—if the Japanese yen falls relative to the dollar.

Types of Bonds

- Bonds can be broken down in to two broad groups, based on the ***nature of payments and maturity***:

a. **Coupon Bonds**
b. Zero coupon Bond/Pure discount bonds
c. Bonds with maturity
d. Perpetual bonds

1). Coupon Bonds:

- These give a **fixed interest payment** each period as well as **paying the face value at maturity.**

Con't...

2) *Zero-Coupon Bonds:*

*The **zero coupon bond** is also known as Strip Bonds or* Pure discount bond.

- A **zero coupon bond** is a bond that pays **no interest** but sells at a deep discount from its face value; it provides compensation to investors in the form of price appreciation.

- Bonds of this type make **no interest payments**; they simply pay the face value at maturity.

- The holder of this type of bond still earns interest because **zero-coupon bonds** always sell at a discount to face value.

Con't…

- **Pure discount bond** do not carry an explicit rate of interest.
- It provides for the payment of a lump sum amount at a future date in exchange for the current price of the bond.
- The difference between the face value of the bond and its purchase price gives the return or YTM to the investor.

Pure Discount Bonds

- **Example:** A company may issue a pure discount bond of Rs 1,000 face value for Rs 520 today for a period of five years. The rate of interest can be calculated as follows:

$$520 = \frac{1,000}{(1+\text{YTM})^5}$$

$$(1+\text{YTM})^5 = \frac{1,000}{520} = 1.9231$$

$$i = 1.9231^{1/5} - 1 = 0.14 \text{ or } 14\%$$

Pure Discount Bonds

- Pure discount bonds are called **deep-discount bonds** or **zero-interest bonds** or **zero-coupon bonds.**
- The **market interest rate**, also called the **market yield**, is used as the discount rate.
- Value of a pure discount bond = PV of the amount on maturity:

$$B_0 = \frac{M_n}{(1+k_d)^n}$$

con't…

- **Perpetual bonds**, also called *consols*, has an indefinite life and therefore, it has no maturity value. Perpetual bonds or debentures are rarely found in practice.

Example

- Suppose that a 10 per cent Rs 1,000 bond will pay Rs 100 annual interest into perpetuity. What would be its value of the bond if the market yield or interest rate were 15 per cent?
- The value of the bond is determined as follows:

$$B_0 = \frac{\text{INT}}{k_d} = \frac{100}{0.15} = \text{Rs } 667$$

Basic Bond Valuation Model

- The value of a bond is the present value of the **periodic interest payments** plus the **present value of the par value** discounted using the **market's required yield.**

- **Value of a bond =**
- Present Value of all cash inflows (income streams) expected out of investment in bond plus
- Present value of redemption value at the end of holding period.

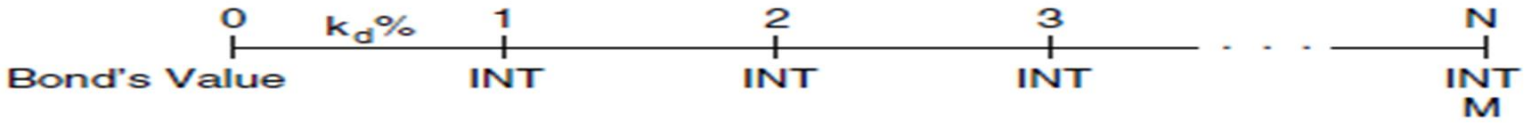
Con't…

Steps to determine the value of the bond

- **Step 1**: Determine the amount and timing of bondholder cash flows (certainty assumption).
  - The total cash flows equal the **promised interest payments and principal payment.**
  - Annual Interest = **Par value × coupon rate**
- Example 9.1: The annual interest for a bond with coupon interest rate of 7% and a par value of $1,000 is equal to $70, (.07 × $1,000 = $70).
- Some bonds may have semi-annual, Quarterly, Monthly interest payments.

Con't…

- **<u>Step-2</u>:** Estimate the appropriate discount rate (Required Rate of Return (RRR)) on a similar risk bond (consider the available alternative investment).
  - Discount rate is the return the bond will yield if it is held to maturity and all bond payments are made.
- **<u>Step-3</u>:** Calculate the present value of the bond's **interest and principal payments** from Step 1 using the discount rate estimated in step 2.



- **Where:**

Kd=The bond's **market rate of interest/discount rate**

N= the number of periods before the bond matures, t*M

INT= Dollars of interest paid each period =Coupon rate x Par value

M= The par, or maturity, value of the bond. This amount must be paid off at maturity. So the value of the bond would be:

$$Bonds\ value = V_B = \frac{INT}{(1+K_d)^1} + \frac{INT}{(1+K_d)^2} + \cdots \frac{INT}{(1+K_d)^N} + \frac{M}{(1+K_d)^N}$$

Con't…

- We can think of **YTM** as the discount rate that makes the present value of the bond's promised interest and principal equal to the bond's observed **market price**.

$$\text{Bond Price} = \frac{\text{Interest}_{\text{year 1}}}{(1+YTM)^1} + \frac{\text{Interest}_{\text{year 2}}}{(1+YTM)^2} + \frac{\text{Interest}_{\text{year 3}}}{(1+YTM)^3} + \frac{\text{Interest}_{\text{year 4}}}{(1+YTM)^4} + \frac{\text{Interest}_{\text{year 5}}}{(1+YTM)^5} + \frac{\text{Principal}}{(1+YTM)^5}$$

Price of bond = **Interest** $\dfrac{\left(1-\dfrac{1}{(1+YTM)^n}\right)}{YTM}$ **+ Par value** $\dfrac{1}{(1+YTM)n}$

Con't…

Note:

- The **coupon rate** and the **interest rate**, r, are not the same thing. *The **coupon rate** is the rate that the bond pays on the principal. The **interest rate** in the pricing equation is the **market interest rate,** that is, **the rate other assets are currently paying.***

Con't....

Example 1:

- The bonds of the Nordy Company have a coupon interest rate of 9%. The interest on the bonds is paid semiannually, the bonds mature in 8 years, and their par value is $1,000. If the required rate of return is 8%, what is the value of each bond? What is the value of each bond if the interest is paid annually?

Exercise 2:

- You own a bond that pays $100 in interest annually, has a par value of $1000, and matures in 15 years. What is the value of the bond if your required rate of return is 12%? What is the value of the bond if your required rate of return (a) increases to 15% or (b) decreases to 8%? Now, recompute all three answers assuming that the bond matures in 5 years instead of 15 years.

Semiannual Interest Payments

- **Corporate bonds** typically pay interest to bondholders semiannually. We can adapt the above Equation from annual to semiannual payments as follows:

$$\text{Beta Value (semi-annual payments)} = (\text{Interest}/2)\left[\frac{1-\frac{1}{\left(1+\frac{YTM_{\text{Market}}}{2}\right)^{2n}}}{\frac{YTM_{\text{Market}}}{2}}\right] + \text{Principal}\left[\frac{1}{\left(1+\frac{YTM_{\text{Market}}}{2}\right)^{2n}}\right]$$

Suppose an investor is considering to purchase a five-year, birr 1000 par value bond ,Bearing a nominal rate of interest of 7%. The prevailing yield to maturity for this bond (required rate of return) is 8%. What should he be willing to pay now to purchase the bond if it matures at par?

$$B_0 = 70/(1.08)^1+70/(1.08)^2+70/(1.08)^3+70/(1.08)^4+70/(1.08)^5+1000/(1.08)^5$$

$$= 64.81 + 60.01 + 55.568 + 51.45 + 47.64$$

$$B_o = 960.51$$

Example-2:

- Tebaber Berta Corporation has a Br. 1,000 par value bond with an 8% coupon interest rate outstanding. Interest is paid semiannually and the bond has 12 years remaining to its maturity date.

✓ **Required:** What is the value of the bond if the required return on the bond is 8%?

Solution:

Given: M = Br. 1,000; k_d = 8% per year or 4% (8%÷2) per semiannual period; I = Br. 40 (Br. 1,000 x 4%); n = 24 semiannual periods (12 x 2); Bo =?

Bo = I(PVIFA k_d,n) + M(PVIF k_d,n)

= Br. 40(PVIFA_4%, 24) + Br. 1,000(PVIF$_4$%, 24)

= Br. 40 (15.2470) + Br. 1,000 (0.3901)

= Br. 1,000

Con't…

Example 3:

- A Birr 1,000 face value bond has two years to maturity and a 9% coupon (paid semi-annually). If investors require a stated yield to maturity of 10% on bonds of this type, what will be the price of the bond?

Exercise 3:

- Ato Daniel has issued a Birr 500 bond with 10 percent interest. The bond is to mature in 5 years, and the current interest rate or required rate of return is 8 percent. If the interest is paid semiannually, what would be the present value of the bond?

Bond Yield

Yield To maturity (YTM):

- If we are given the **par value**, the **coupon interest rate**, the **number of periods**, and the **value of the bond**, then interest rate on the bond k_d?

  Would be
- **Yield to Maturity (YTM)** is the rate of return investors earn if they buy a bond at a specific price Bo and hold it until maturity. So

➢ **Trial and Error**: Keep guessing until you find the rate whereby the **present value of the interest and principal payments** is equal to the **current price of the bond**. (necessary procedure without a financial calculator or computer).

- The **approximate YTM** can be found using the following approximation formula:

$$\textbf{Approximate YTM} = \frac{I + \dfrac{M - Bo}{n}}{\dfrac{M + Bo}{2}}$$

Con't…

- **Where:**

YTM= Yield to Maturity/ required rate of return

I= periodic interest payment

M= Face Value/ Maturity Value/ Par Value of the bond

Bo= Price of the bod

N= Number of periods to maturity

Approximate yield to maturity

$$= \frac{\text{Annual interest} + \text{Accrued capital gains}}{\text{Average value of bond}}$$

(does not consider time value of money)

$$= \frac{INT + \left(\frac{M - V_d}{N} \right)}{\left[\frac{2(V_d) + M}{3} \right]}$$

Example:

- Zebra Company has a Br. 1,000 par value, 10% coupon interest rate, and 15 years to maturity. The bond is currently selling at Br. 1,090. Compute the YTM.

Solution:

- **Given:** M = Br. 1,000; I = Br. 100 (Br. 1,000 x 10%); n = 15; Bo = Br. 1,090; YTM = ?
- Approximate YTM = $$\frac{Br.100+\frac{Br.1{,}090}{15}}{\frac{Br.1{,}000+Br.1{,}090}{2}}=9\%$$

Con't....

Example-2: Suppose that the market price of a bond is $883.40 (with a face value of $1,000). The bond will pay interest at 6% per annum for 5 years, after which it will be redeemed at par. What is the bond's rate of return?

We obtain **YTM = 10%** by trial and error.

Example-3: The Heymann Company's bonds have 4 years remaining to maturity. Interest is paid annually; the bonds have a $1,000 par value; and the coupon interest rate is 9 percent.

What is the yield to maturity at a current market price of (1) $829 or (2) $1,104?

Con't....

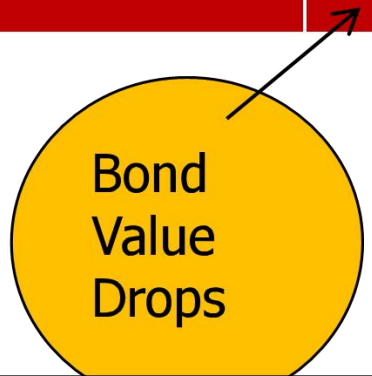
Exercise 3:

- Dullco Company bonds are selling in the market for $1,045 (104.50). These bonds will mature in 15 years and pay $70 in interest annually. If the bonds are purchased at the market price, what is the (a) coupon rate, (b) current yield,(c) approximate yield to maturity?

Bond Valuation: Four Key Relationships

- **First Relationship:** The **value of bond** is inversely related to changes in the **yield to maturity.**

	YTM = 12%	YTM rises to 15%
Par value	$1,000	$1,000
Coupon rate	12%	12%
Maturity date	5 years	5 years
Bond Value	$1,000	$899.44

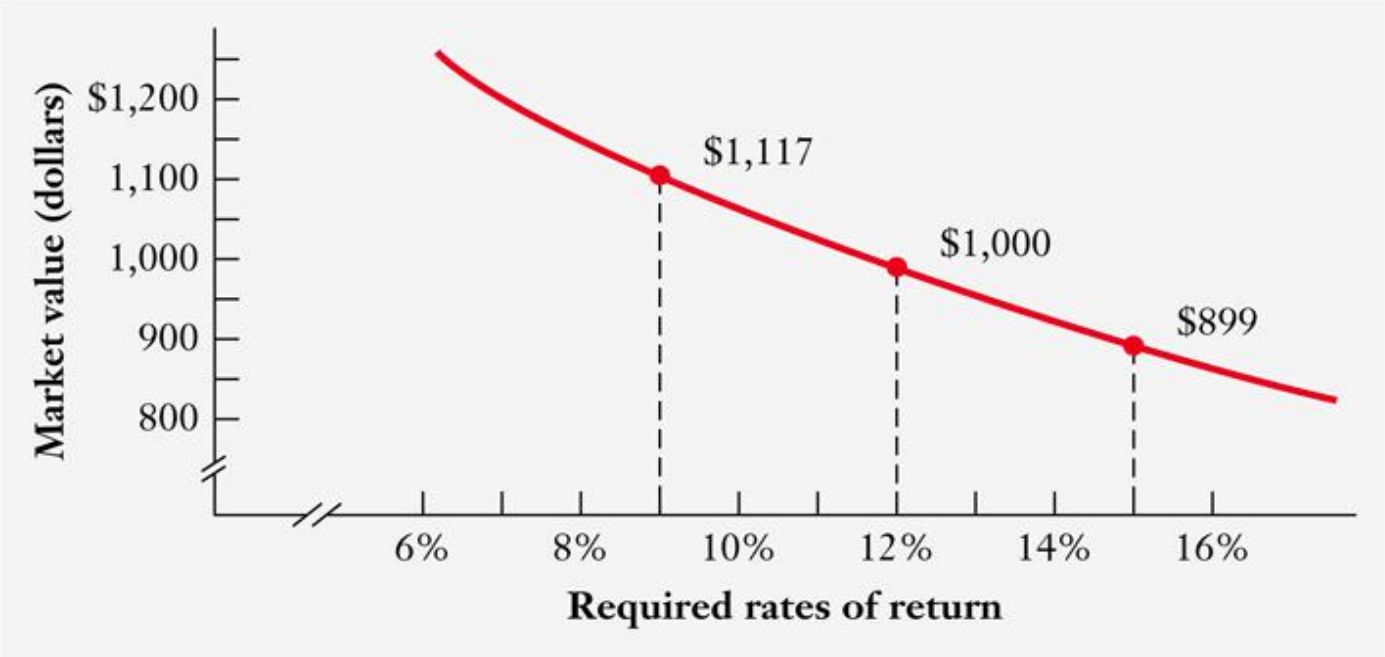


The value of bond is inversely related to the **yield to maturity**.

Figure 9.1

Bond Value and the Market's Required Yield to Maturity (5-Year Bond, 12% Coupon Rate)

Bond prices and yields to maturity vary inversely. Since principal and interest payments are fixed, the price of the bond must adjust such that the bond yields the market's current yield to maturity. For example, if the market yield to maturity were to increase from 12% to 15%, the price of the bond would have to fall from $1,000 to $899 in order for an investor who bought the bond today to earn 15%.



con't...

- **Second Relationship:** The **market value of a bond** will be **less** than its **par value** if the **yield to maturity** is above the **coupon interest rate** and will be valued above par value if the **yield to maturity** is below the coupon interest rate.
- The **market value of a bond** will be **equal to** its **par value** if the **yield to maturity** is equal to the **coupon interest rate.** i.e

- *Coupon rate < interest rate in the market $\Rightarrow$ bonds sell at a discount*
- *Coupon rate > interest rate in the market $\Rightarrow$ bonds sell at premium*
- *Coupon rate = interest rate in the market $\Rightarrow$ bonds sell at a par*

Con't…

- When a bond can be bought for less than its par value, it is called **discount bond**. For example, buying a $1,000 par value bond for $950.

- When a bond can be bought for more than its par value, it is called **premium bond**. For example, buying a $1,000 par value bond for $1,110.

- When a bond can be bought for equal to its par value, it is called **a par value bond**. For example, buying a $1,000 par value bond for $1,000.

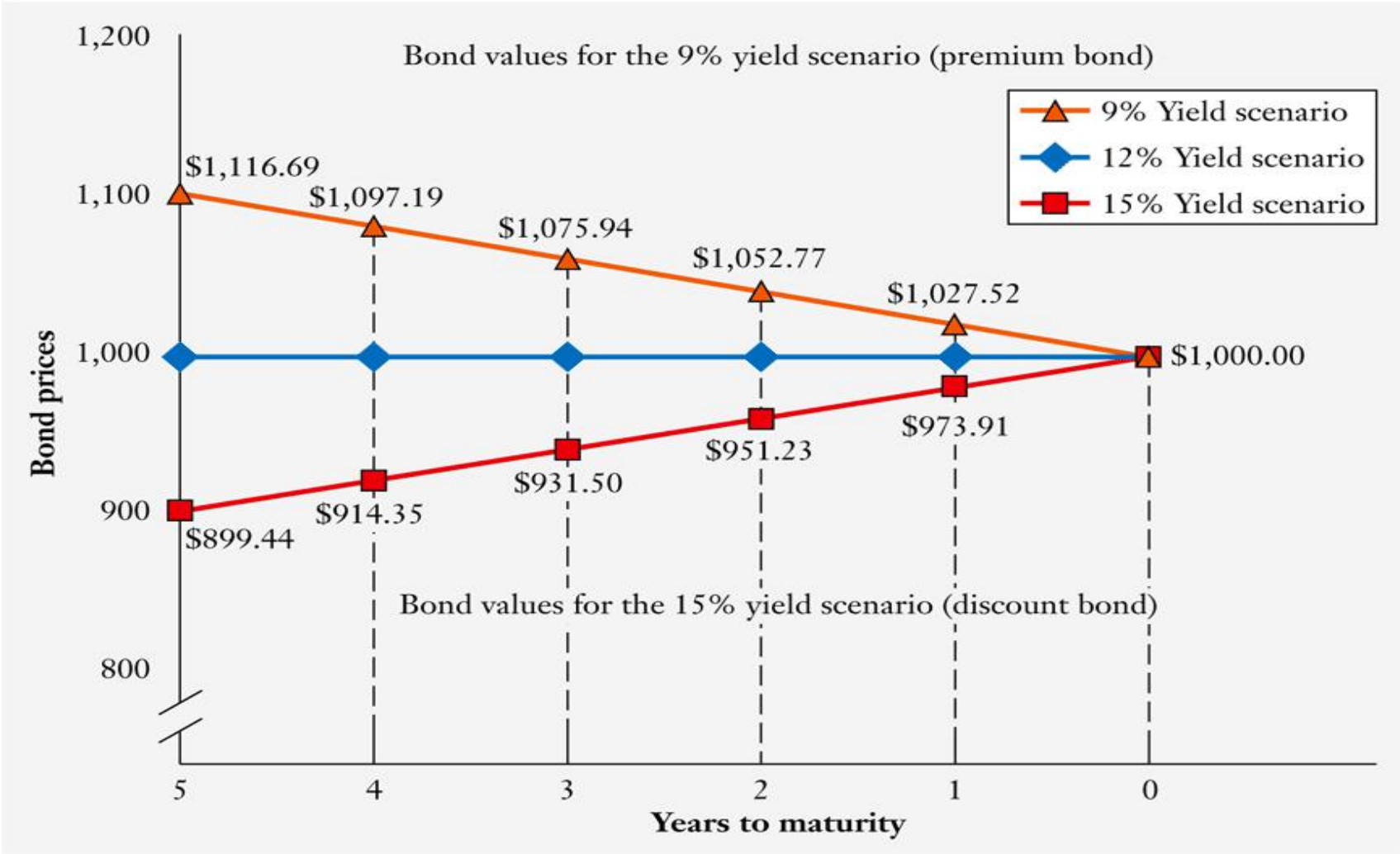
Con't…

- **Third Relationship:** As the **maturity date approaches,** the **market value** of a bond approaches its **par value.**
  - Regardless of whether the bond was trading at a discount or at a premium, the price of bond will converge towards par value as the maturity date approaches.

Figure 9.2

Value of a 12-Percent Coupon Bond during the Life of the Bond

As a bond approaches its maturity, the price of the bond approaches the principal or par value of the bond.



Con't…

- **Fourth Relationship:** Long term bonds have **greater interest rate risk than short-term bonds.**
  - While all bonds are affected by a change in interest rates, long-term bonds are exposed to greater volatility as interest rates change.

Stock Valuation

- Although **debt** and **equity** capital are both sources of financing used by firms, they are very different in several important respects.

- Most importantly, debt financing is obtained from **creditors**, and **equity financing** is obtained from investors who then become part owners of the firm.

- Creditors (lenders or debt holders) have a **legal right** to be repaid, whereas investors have only an expectation of being **repaid.**

Con't…

- **Debt** includes all borrowing incurred by a firm, including bonds, and is repaid according to a fixed schedule of payments.

- **Equity** consists of funds provided by the firm's owners (investors or stockholders) and is repaid subject to the firm's performance

Valuation of Shares

- A company may issue two types of shares:
  - Ordinary share /Common stock
    - The fundamental ownership claim in a public corporation.
  - Preferred stock
    - A hybrid security that has characteristics of both **bonds** and **common stock.**

Valuation of Preference Stocks

- **Preferred stock** is a stock with dividend priority over common stock, normally with a **fixed dividend rate,**
- **Preferred stockholders** have **preference** over common stock in the **payment of dividends** and in the distribution of corporation assets in the **event of liquidation.**
- It is a hybrid security because it posses **both debt and equity** characteristics that affects the determination of an intrinsic value.

Characteristics of Preferred Stock

- Similar to **common stock** in that it represents an ownership interest but, **like bonds**, pays a fixed periodic dividend.
- Like common stocks, preferred stocks **do not have a fixed maturity date.** Also,
- like bond, preferred stocks may be **redeemable**
- like common stocks, nonpayment of dividends does not lead to bankruptcy of the firm. (**Dividends not a liability**)

- **Senior to common stock but junior to bonds:**
  - In the event of bankruptcy, preferred stockholders have priority over common stock. However, they have lower priority than the firm's debt holders.
  - Firm must pay dividends on preferred stock prior to paying dividend on common stock.

Con't…

- Most preferred stock carry a **cumulative feature**:
  - ✓ **Cumulative** feature requires that all past unpaid dividends to be paid before any common stock dividends can be declared.

❑ Thus, preferred stocks are less risky than common stocks but more risky than bonds.

- ➢ Generally do not have voting rights
- ➢ Nonparticipating preferred stock
- ➢ **Dividend** is fixed regardless of any increase or decrease in the firm's value

Con't…

- Since **preferred stockholders** generally receive a fixed dividend and the stocks are perpetuities (non-maturing), it can be valued using the **present value of perpetuity equation.**
- Therefore, the value of a preferred stock is found by the following formula:

$$V_{ps} = \frac{D_{ps}}{r_{ps}}$$

Where:

- Vps = Value of the preferred stock
- Dps = Constant Preferred stock dividends
- rps = The required rate of return on the preferred stock

***rps*= Cost to raise a dollar of preferred stock.**

Example

1. Assume that a preferred stock's annual dividend is Birr 50 and the required rate of return is 10 pre cent, what is its worth today? V_{ps} = **Birr 500**

2. *"Ato Yilma's preference share provides a dividend of Birr 5 annually. The current yield for the preference share or equivalently the required rate of return for the shareholders is 8 percent. Calculate the value of the preference share.*

Con't…

3. A share of preferred stock pays a $10 annual dividend.
   - Calculate its intrinsic value to an investor whose required rate of return is 10%
   - If the preferred stock sales for $105 per share, is this a desirable investment?
   - If the stock is purchased for $95, what is the stock's required rate of return?

4. What is the present value of a share of preferred stock that pays a dividend of $12 per share if the market's yield on similar issues of preferred stock is 8%?

$$V_{ps} = \frac{D_{ps}}{r_{ps}} = \frac{12.00}{0.08} = \$150.$$

COMMON STOCK VALUATION

- Common stock represents a residual ownership position in the corporation.
- **Common stock** represents an ownership interest in a corporation.
- A **share of common stock is simply a piece of paper** characterized by the following features:

A. Dividends received over investor's stock holding period

- It entitles its owner to dividends, but only if the company has earnings out of which dividends can be paid, and only if management chooses to pay dividends rather than retaining and reinvesting all the earnings.

Features of Common Stock

- Residual income and asset claimants
  - Unlimited upside
  - First to suffer
- Priority
  1. Debt
  2. Preferred Stock
  3. Common Stock
- A firm cannot go bankrupt for not declaring dividends
- **Dividends and Taxes**
  - Dividend payments are at the discretion of the BoD.
  - Dividend payments are not considered a business expense, therefore, they are not tax deductible
  - Dividends received by individuals are taxed as ordinary income
  - Dividends are not a liability of the corporation until declared by the BoD.
  - Dividends are not tax deductible for the issuing corporation

Con't...

- The term **common stock** usually implies the shareholder has **no special preference** either in **dividends or in bankruptcy.**

- Shareholders, however, control the corporation through their ***right to elect the directors***. The directors in turn hire management to carry out their directives.

- Directors are elected at an annual shareholders' **meeting by a vote of the holding of a majority of** shares present and entitled to vote.

Con't…

- **Pre-emptive Rights:**

- The **pre-emptive right** allows common stockholders to maintain their *proportionate* ownership in the corporation when **new shares are issued**, thus protecting them from **dilution** of their ownership.
- A **dilution of ownership** is a reduction in each previous shareholder's fractional ownership resulting from the issuance of additional shares of common stock. Pre-emptive rights allow pre-existing shareholders to maintain their pre-issuance voting control and protects them against the dilution of earnings.

Con't…

B. **Price expected to be received when stock is sold:**

- Stock can be sold at some future date, hopefully at a **price greater than the purchase price.** If the stock is actually sold at a price above its purchase price, the investor will receive a **capital gain**.

Generally, at the time people buy common stocks, they do expect to receive **capital gains**; otherwise, they would not purchase the stocks. However, after the fact, one can end up with capital losses rather than capital gains. LILCO's stock price dropped from $17.50 to $3.75 in one year, so the *expected* capital gain on that stock turned out to be a huge ***actual*** **capital loss.**

COMMON STOCK VALUATION MODELS

1. The dividend per share remains constant forever, implying that the growth rate is nil (THE ZERO GROWTH MODEL)

2. The dividend per share grows at a constant rate per year forever (THE CONSTANT GROWTH MODEL).

3. The dividend per share grows at a constant rate for a finite period, followed by a constant normal rate of growth forever thereafter (THE TWO STAGE MODEL).

4. The dividend per share, currently growing at an above-normal rate, experiences a gradually declining rate of growth for a while. Thereafter it grows at a constant normal rate (THE "H" MODEL).

•

Basic Terms

- D_0= is the most recent dividend, which has already been paid;
- D_1= is the first dividend expected, and it will be paid at the end of this year;
- D_2= is the dividend expected at the end of two years; and so forth.
- D_t= Dividend the stockholder *expects* to receive at the end of Year **t**.
- P_0/V_{cs}= Value or **market price** of the common stock today.
- **g=** Expected **growth rate** in dividends.
  - ✓ If dividends are expected to grow at a **constant rate,** g is also equal to the expected rate of growth in earnings and in the stock's price.

Con't…

- **Rcs or Ks=** Minimum acceptable, or **required rate of return** on the stock, considering both its riskiness and the returns available on other investments.
- D1/P0 = expected **dividend yield** on the stock during the coming year.
- ✓ If the stock is expected to pay a dividend of D1= $ 1 during the next 12 months, and if its current price is P0= $ 10, then the expected dividend yield is $ 1/$ 10 = 10%. So

- **Value of the common stock (Po)** $= \frac{D_1}{(1+K_s)^1} + \frac{D_2}{(1+K_s)^2} + \cdots + \frac{D^\infty}{(1+K_d)^\infty}$

- Which is the **general formula for the valuation of a common stock.**

Con't…

- The above general formula indicates that we are discounting the dividend at the end of the first year, D 1, back one year; the dividend in the second year, D2, back two years; the dividend in the n_{th} year back ***n*** years; and the dividend in infinity back an infinite number of years. The required rate of return is ***kcs.***

A. Valuation of Zero-Growth Stock/Constant Dividend Model

-Under this method the **dividend payment pattern remains constant over time.** It is the simplest approach to dividend valuation. In terms of the notation already introduced,

D1 = D2 =…… = D∞

$$P_0 = \frac{D}{1+k_c} + \frac{D}{(1+k_c)^2} + \frac{D}{(1+k_c)^3} + \frac{D}{(1+k_c)^4} + \ldots\ldots\ldots . + \frac{D}{(1+k_c)^{\infty}}$$

$$= \sum_{t=1}^{\infty} \frac{D}{(1+k_c)^t} = \frac{D}{k_c}$$

- Zero growth stock is a common stock whose future dividends remain constant, g = 0. So, all future expected dividends will be equal, called ***perpetuity.***
- $P_0 = \dfrac{D}{P_0}$ $\qquad\qquad \dfrac{D}{kcs}$
- When we solve for kc_s, =

Con't…

Example:

- A corporation pays a dividend of $6 per year on each share of its common stock.
  - ✓Compute the **intrinsic value** of the stock if the investor's required rate of return is 12%
  - ✓If the stocks are **traded in the market** for $60 a share, is this a desirable investment for the investor?
  - ✓If the investor purchased the stock for $45, what is the stock's required rate of return?

B. Constant_Dividend_Growth_Model

- It is also known as **normal growth model or Gorden Model** in which future dividends are expected to be grow at a uniform rate, **g**. Hence, $D_t = D_0(1+g)^t$. Based on this, P_0 will be determined as follows.

- The intrinsic value of common stock (Po**) =** $\dfrac{D_o(1+g)}{(Ks-g)}$

$$P_o = \frac{D\,1}{(kc_s - g)}, \text{ where } k_s > g$$

$P_t = D_t * (1+g)/(r-g)$

Where, D_o = is the most recent dividend per share

g = is the dividend growth rate

Kcs = is the discount rate which represents the investor's required rate of return

B. The Constant Dividend Growth Model

It is also known as **normal growth model or Gorden Model** in which future dividends are expected to be grow at a uniform rate, **g**. Hence, $D_t = D_0(1+g)^t$. Based on this, P_0 will be determined as follows.

This model is based on the following assumptions:

- ✓**Dividends grow at a constant annual (compound) rate**
- ✓**The dividend growth rate is less than the investor's required rate of return**
- ✓**There is no explicit resale price**

$$\text{Value of Common Stock in Year 0} = \frac{\text{Dividend Paid in Year 0}\left(1+\text{Dividend Growth Rate}\right)^1}{\left(1+\text{Stockholder's Required Rate of Return}\right)^1} + \frac{\text{Dividend Paid in Year 0}\left(1+\text{Dividend Growth Rate}\right)^2}{\left(1+\text{Stockholder's Required Rate of Return}\right)^2}$$

$$+ \frac{\text{Dividend Paid in Year 0}\left(1+\text{Dividend Growth Rate}\right)^3}{\left(1+\text{Stockholder's Required Rate of Return}\right)^3} + \cdots + \frac{\text{Dividend Paid in Year 0}\left(1+\text{Dividend Growth Rate}\right)^n}{\left(1+\text{Stockholder's Required Rate of Return}\right)^n}$$

The Constant Dividend Growth Rate Model

$$V_{cs} = \frac{D_0(1+g)}{r_{cs}-g} = \frac{\text{Dividend in year 1}}{\text{Stockholders' Required Rate of Return} - \text{Growth Rate}}$$

Where $k_s > g$

- V_{cs} = Value of a share of common stock
- D_0 = Annual cash dividend in the year of valuation (paid already)
- g = annual growth rate in the dividend
- r_{cs} = the common stockholder's required rate of return

Constant dividend growth model which is also known as **normal growth model or Gorden Model** in which future dividends expected to be grow at a uniform rate, g. Hence, $D_t = D_0(1+g)^t$. Based on this, P_0 will be determined as follows.

✓ **The intrinsic value of common stock (P_t) =** $\dfrac{D_t(1+g)}{(rcs-g)}$

Con't…

This model is based on the following assumptions:

1. Dividends grow at a constant annual rate
2. The constant growth rate will continue for an infinite period
3. The dividend growth rate (g) is less than the investor's required rate of return (k)
4. There is no explicit resale price

Examples:

- A corporation's common stock pays a current dividend of $6; the dividend is expected to grow at a rate of 2% per year indefinitely:
  - ✓ Compute the intrinsic value for this stock if the investor's required rate of return is 10%
  - ✓ Assume that the stock's current market price is $75, compute the required rate of return if the stock is bought at this price.

Con't…

2. Thomas Brothers is expected to pay a $0.50 per share dividend at the end of the year. The dividend is expected to grow at a constant rate of 7 percent a year. The required rate of return on the stock is 15 percent. What is the value per share of the company's stock?

3. Harrison Clothiers' stock currently sells for $20 a share. The stock just paid a dividend of $1.00 a share. The dividend is expected to grow at a constant rate of 10 percent a year. What stock price is expected 1 year from now? What is the required rate of return on the company's stock?

Con't…

- Consider the valuation of a share of common stock that paid a $2 dividend at the end of last year and is expected to pay a cash dividend every year from now to infinity. Each year, the dividends are expected to grow at a rate of 10%. Based on an assessment of the riskiness of the common stock, the investor's required rate of return is 15%. What is the value of this common stock?

Solution:

$$V_{cs} = \frac{D_0(1+g)}{r_{cs}-g} = \frac{2(1+.10)}{.15-.10} = 44$$

Check Yourself

- What is the value of a share of common stock that paid $6 dividend at the end of last year and is expected to pay a cash dividend every year from now to infinity, with that dividend growing at a rate of 5 percent per year, if the investor's required rate of return is 12% on that stock?
  - What will be the stock value if the growth rate is 10%?
  - How about a dividend growth rate of 13%?

  – Answers: 90;330;inf.

Note:

- ✓ What if the dividends are expected to **decline each year**? That is, what if g is negative? We can still use the **Dividend Valuation Model,** but each dividend in the future is expected to be ***less*** than the one before it.

- ✓ For example, suppose a stock has a current dividend of $2 per share and the required rate of return is 10%. If dividends are expected to *decline* 6% each year, what is the value of a share of stock today? We know that $D0 = \$2$, $rcs = 10\%$, and $g = -6\%$. Therefore,

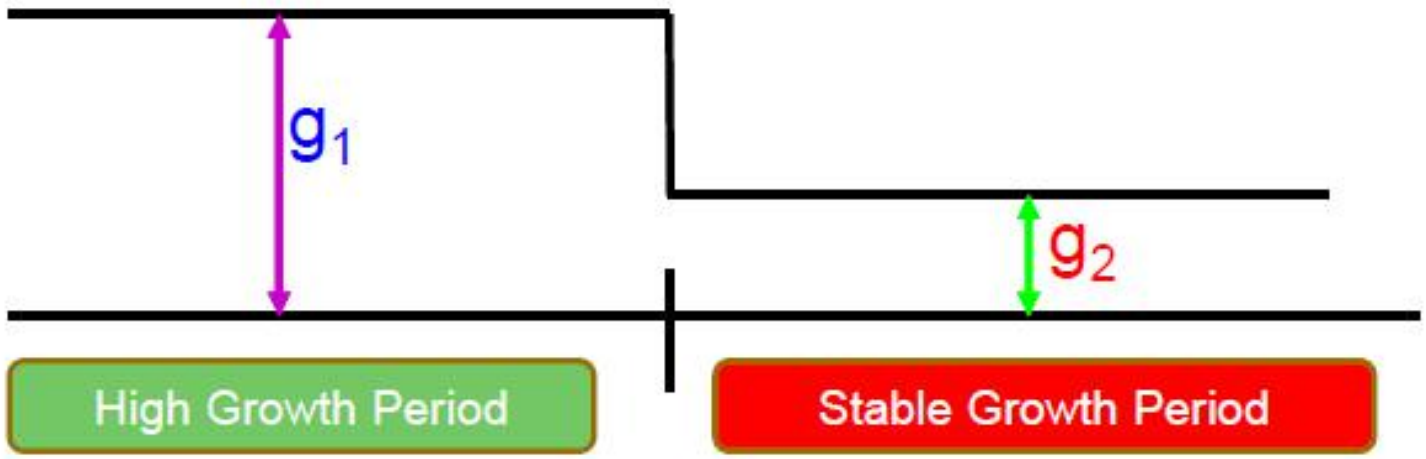
$$P_0 = \frac{\$2(1-0.06)}{0.10+0.06} = \frac{\$1.88}{0.16} = \$11.75$$

C. Non Constant Growth Model *or Supernormal Growth*

- For many companies, it is inappropriate to assume that dividends will grow at a constant rate. *Firms typically go through life cycles.*
- During the early part of their lives, their growth is much faster than that of the economy as a whole; then they match the economy's growth; and finally their growth is slower than that of the economy. These kinds firms are called **supernormal,** or **non-constant growth** firms.
- In the supernormal case, however, the expected growth rate is not a constant—it declines at the end of the period of supernormal growth.

Con't…

- *Two Stage Growth Model*
- assumes that a firm will initially grow at a rate g_1 for n years, and thereafter grow at a rate $g_2 < r$ during a *perpetual* second stage of growth.



Con't....

- **The steps to determine value of the stock is:**
  1. Find the ***present value of the dividends during the supernormal period,***
  2. Find the price of the stock at the ***end of the non-constant growth period*** and discount it back that price by the same period,
  3. Finally, add the above two components to find the intrinsic value of the stock, $P_{0.}$

Two Stage Growth Model

The simplest extension of the constant growth model assumes that the extraordinary growth will continue for a finite number of years and thereafter the normal growth rate will prevail indefinitely.

$$P_0 = \left[\frac{D_1}{1+k_c} + \frac{D_1(1+g_1)}{(1+k_c)^2} + \frac{D_1(1+g_1)^2}{(1+k_c)^3} + \ldots\ldots + \frac{D_1(1+g_1)^{n-1}}{(1+k_c)^n} \right] + \frac{P_n}{(1+k_c)^n}$$

where, P_0 = current price of the equity share

D_1 = dividend expected a year hence

g_1 = extraordinary growth rate applicable for n years

P_n = price of the equity share at the end of the year n

- The **stock's intrinsic value today**, is the present value of the dividends during the non-constant growth period plus the present value of the horizon value:

$$\hat{P}_0 = \underbrace{\frac{D_1}{(1+K_s)^1} + \frac{D_2}{(1+K_s)^2} \cdots\cdots\cdots \frac{D_N}{(1+K_s)^N}}_{\text{Pv of dividends during the non constant growth period}} + \underbrace{\frac{D_{N+1}}{(1+K_s)^{N+1}} + \cdots + \frac{D_\infty}{(1+K_s)^\infty}}_{\text{Pv of dividends during the constant growth period}}$$

$t = 1, \ldots N$

$t = N+1, \ldots \infty$

$$\widehat{P}_0 = \frac{D_1}{(1+K_s)^1} + \frac{D_2}{(1+K_s)^2} + \frac{D_N}{(1+K_s)^N} + \frac{\widehat{P}_N}{(1+K_s)^N}$$

Pv of dividends during the non constant growth period

Pv of Horizon value

$$\widehat{P}_0 = \frac{\frac{(D_{N+1})}{(K_s - g)}}{(1+K_s)^N}$$

Example:

- Suppose the stock's last dividend paid shows $1.15 and expected to grow at 30% for the first 3 years and at 8% constantly then after. The required rate of return is 13.4% per annum. Determine the value of the common stock?

Solution

	D_t	$PV(_{13.4\%,t})$	PV of D_t
Step 1. $D_1 = \$1.15\ (1.30)^1 =$	$1.495	X 0.8818 =	$1.3183
$D_2 = \$1.15\ (1.30)^2 =$	1.9435	X 0.7776 =	1.5113
$D_3 = \$1.15\ (1.30)^3 =$	2.5266	X 0.6857 =	1.7325 = $4.562
$D_4 = \$2.5266\ (1.08)^1 =$	2.7287		

Step 2. $P_3 = \dfrac{D4}{(k_s - g)} = \dfrac{2.7287}{(13.4\% - 8\%)} = 50.5315$

PV of $P_3 = \dfrac{50.5315}{(1.134)^3} = \$34.6494$

Step 3. $P_0 = \$4.562 + \$34.6494 =$ *$39.2115*

Example:

The current dividend on an equity share of Vertigo Limited is Rs 2.00. Vertigo is expected to enjoy an above-normal growth rate of 20% for a period of 6 years. Thereafter, the growth rate will fall and stabilize at 10%. Equity investors require a return of 15 %. What is the intrinsic value of the equity share of Vertigo ?

g_1 = 20 %, g_2 = 10 %, n = 6 years, k_c = 15%, D_0 = Rs 2.00

Ans: Rs 79.597

Exampple

- Suppose a firm is expected to increase dividends by 20% in one year and by 15% in two years. After that dividends will increase at a rate of 5% per year indefinitely. If the last dividend was $1 and the required return is 20%, what is the price of the stock?

- Remember that we have to find the PV of all expected future dividends.

Solution

- Compute the dividends until growth levels off
  - $D_1 = 1(1.2) = \$1.20$
  - $D_2 = 1.20(1.15) = \$1.38$
  - $D_3 = 1.38(1.05) = \$1.449$
- Find the expected future price (by using the final dividend calculation)
  - $P_2 = D_3 / (k - g) = 1.449 / (.2 - .05) = 9.66$
- Find the present value of the expected future cash flows
  - $P_0 = 1.20 / (1.2) + (1.38 + 9.66) / (1.2)^2 = 8.67$

Example

Example:

- ABC Company does not plan to pay a dividend until year 5. ABC's expects the dividend in year five to be $1 and dividends in future years to grow at a constant rate of 5%. If the firm's required rate of return is 13%, what is the value of a share of stock in the company today?

$P_4 = 1/(.13 - .05) = \$12.50$

$P_0 = 12.50(1.13)^{-4} = \$7.67$

Example:

1. You predict that in 5 years, the company will pay a dividend for the first time. The dividend will be 0.50 birr per share. Then this dividend is expected to grow at a rate of 10% per year indefinitely. The required rate of return on companies such as this is 20%. What is the price of the stock today?

$P_4 = D_4 * (1+g)/(r-g)$

$= D_5/(r-g)$

$= 0.50/ (0.20-0.10)$

$= 5$ birr

If the stock will be worth 5 birr in four years, then we can get the current value by discounting this price back four years at 20%.

$P_o = 5/ (1.20)^4$ = The stock is therefore worth **2.41** today.

Con't....

2. For example, suppose that you have come up with the following dividend forecasts for the next three years

Years	**Expected dividend**
1	1.00
2	2.00
3	2.50

After the third year, the dividend will grow at a constant rate of 5% per year. The required return is 10%. What is the value of the stock today? For this problem the constant growth starts at time 3. This means we can use our constant growth model to determine the stock price at time 3, P_3.

Con't…

3. To calculate this present value, we first have to compute the present value of the stock price three years **down the road,** just as we did before. We then have to add in the present value of the dividends that will be paid between now and then.

So, the price in three years is:

$P_3 = D_3 * (1+g)/(r-g)$

$=2.50 * 1.05/(0.10-0.05)$

$=$**52.50 birr**

We can now calculate the total value of the stock as the present value of the stock as the present value of the first three dividends plus the present value of the price at time 3, P_3.

$P_0 = D_1/(1+r)^1 + D_2/(1+r)^2 + D_3/(1+r)^3 + P_3/(1+r)^3$

$= 1.00/(1+0.10)^1 + 2.00/(1+0.10)^2 + 2.50/(1+0.10)^3 + 52.50/(1+0.10)^3 =$ **43.88 birr**

Con't…

4. Suppose the stock's last dividend paid shows $1.15 and expected to grow at 30% for the first 3 years and at 8% constantly then after. The required rate of return is 13.4% per annum. Determine the value of the common stock?

	D_t	$PV(_{13.4\%,t})$	PV of D_t
❖ Step 1. $D_1 = \$1.15\ (1.30)^1 =$	$\$1.495$	X 0.8818	= $1.3183
$D_2 = \$1.15\ (1.30)^2 =$	1.9435	X 0.7776	= 1.5113
$D_3 = \$1.15\ (1.30)^3 =$	2.5266	X 0.6857	= 1.7325 = $4.562
$D_4 = \$1.15\ (1.30)^4 =$	2.7287		

❖ Step 2. $P_3 = \frac{D_3}{(k_s - g)} = \frac{2.7287}{(13.4\% - 8\%)} = 50.5315$

PV of $P_3 = \frac{50.5315}{(1.134)^3} = \$34.6494$

❖ Step 3. $P_0 = \$4.562 + \$34.6494 =$ ***$39.2115***

Con't…

5. Snyder Computer Chips Inc. is experiencing a period of rapid growth. Earnings and dividends are expected to grow at a rate of 15 percent during the next 2 years, at 13 percent in the third year, and at a constant rate of 6 percent thereafter. Snyder's last dividend was $1.15, and the required rate of return on the stock is 12 percent.

✓ Calculate the value of the stock today.

What Causes Stock Prices to Go Up and Down?

$$V_{cs} = \frac{D_0(1+g)}{r_{cs}-g} = \frac{\text{Dividend in year 1}}{\text{Stockholders' Required Rate of Return} - \text{Growth Rate}}$$

- The above Equation indicates that there are **three variables that drive share value:**
  - The most recent dividend (D_0): **The more, the higher.**
  - Expected rate of growth in future dividends (g): **The higher, the higher.**
  - Investor's required rate of return (r_{cs}): **The higher, the lower.**
- Since most recent dividend (D_0) has already been paid, it cannot be changed. Thus, variations in the other two variables, r_{cs} and g, can lead to changes in stock prices.

Con't…

- ✓ The **Dividend Valuation Model** makes some sense regarding the relation between the value of a share of stock, the growth in dividends, and the discount rate:

- ❖ The greater the current dividend, the greater the value of a share of stock.

- ❖ The greater the expected growth in dividends, the greater the value of as hare of stock.

- ❖ The more uncertainty regarding future dividends, the greater the discount rate and the **lower the value of a share of stock.**

Con't…

- **However, the DVM has some drawbacks:**
- What if the firm does not pay dividends now? In that case, $D1$ would be zero and the expected price would be zero. But a zero price for stock does not make any sense! And if dividends are expected in the future, but there are no current dividends, what do you do?

- What if the growth rate of dividends is greater than the required rate of return? This implies a negative stock price, which isn't possible

Table 10.2 Summary of Discounted Cash Flow Valuation of Bonds, Preferred Stock, and Common Stock

Bonds and preferred stock state a promised cash payment to the security holder. In the case of a bond, interest and principal must be paid in accordance with the terms of the bond contract (indenture). Preferred shares have stated dividend yields, which when multiplied by the face or par value of the preferred stock, equal the promised preferred dividend. Both bonds and preferred stock are valued by discounting these promised cash flows back to the present. However, since these are promised (and not expected) cash flows, we discount the cash flows using promised rate of return as reflected in current market prices of similar securities. Common stock, on the other hand, does not have a contractual promised dividend payment, so we apply the discounted cash flow model in this instance by estimating expected future dividends and then discounting them back to the present using the expected rate of return that an investor would require if investing in a stock with the risk attributes of the shares being valued.

Type of Security	Cash Flow	Discount Rate	Valuation Model
Bond	**Promised interest and principal payments**. These payments are set forth in the contract between the bond issuing company and the owner of the bond.	**Market's required yield to maturity (YTM market)**. Typically the YTM on a similar bond is used to value a bond. This YTM is the realized rate of return to the bondholder *only* if all promised payments are made on time. Consequently, the yield to maturity calculated for a bond is a promised yield and not the expected yield.	$\text{Bond Value} = \text{Interest}\left[\frac{1 - \frac{1}{(1 + YTM \text{ market})^n}}{YTM \text{ market}}\right] + \text{Principal}\left[\frac{1}{(1 + YTM)^n}\right]$
Preferred stock	**Promised dividends.** Dividends are defined using a contractually set dividend yield that is multiplied by the par or face value of the preferred stock to get the preferred stock dividend.	**Market or promised yield on preferred stock**. We typically calculate this yield using market prices and promised dividends for similar shares of preferred stock. This yield is a promised yield that will only be earned if the preferred stock dividends are fully paid every period as promised.	$\text{Value of Preferred Stock } (V_{ps}) = \frac{\text{Annual Preferred Stock Dividend}}{\text{Market's Required Yield on Preferred Stock}} = \frac{D_{ps}}{r_{ps}}$
Common stock	**Expected future dividends.** No dividend is prescribed for common stock. Instead dividends must be estimated, so we value common stock using expected rather than promised future cash flows. In the constant dividend growth rate model dividends are estimated using a constant rate of growth from year to year.	**Investor's expected rate of return which is the investor's required rate of return**. Since common stock dividends are risky we used expected future dividends and discount them using a risk-adjusted or expected rate of return for investing in shares of stock of firms with similar risk to the common stock being valued. We can estimate this expected rate of return using the CAPM.	$\text{Value of Common Stock } (V_{cs}) = \frac{D_0(1 + g)}{r_{cs} - g}$

SUMMARY QUESTIONS

Example: Bumblebee Corporation has preferred stock outstanding which pays a dividend of $5 at the end of each year. The preferred stock sells for $60 a share. What is the preferred stock's required rate of return?

Expected Rate of Return = Dividend Yield + Capital Gains Yield

$$K_s = \frac{D_1}{\hat{P}_0} + g$$

Example: A common stock is expected to pay a dividend of $10 next year and dividends are expected to grow at a constant rate of g = 10% thereafter. If the discount rate for this stock is equal to 15%, what is the current price of this stock?

$$\hat{P}_0 = \frac{D_1}{K_s - g} = \frac{10}{.15 - .10} = \$200$$

Example: ABC Inc. is expected to pay a $0.50 per share dividend at the end of the year (i.e., *D1=$0.50). The dividend* is expected to grow at a constant rate of 7% a year. The required rate of return on the stock is 15%. What is the value per share of the company's stock?

Example: XYZ Inc. stock currently sells for $20 a share. The stock just paid a dividend of $1.00 a share (i.e., *D0= $1.00).* The dividend is expected to grow at a constant rate of 10% a year. What is the required rate of return?

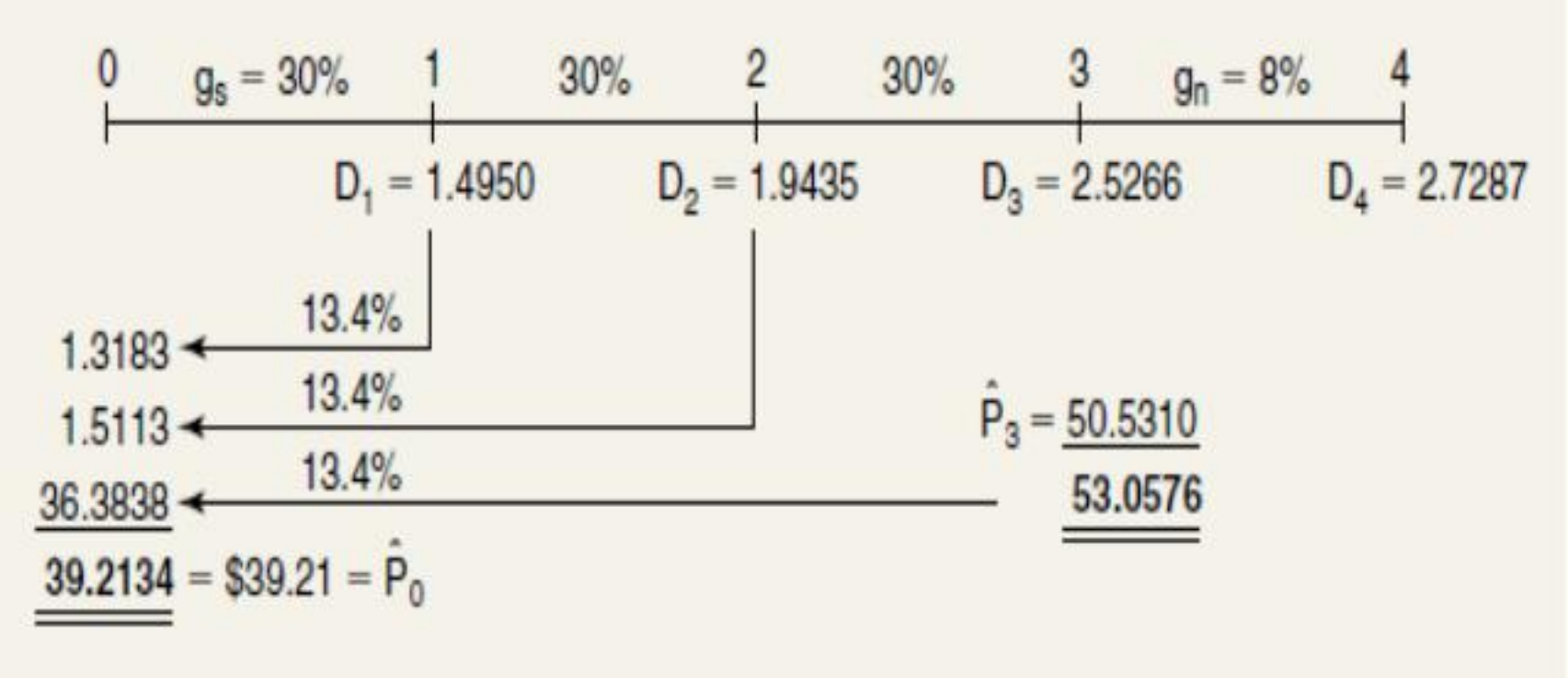
Example: A stock is trading at $80 per share. The stock is expected to have a year-end dividend of $4 per share (*D1= $4.00), which* is expected to grow at some constant rate g throughout time. The stock's required rate of return is 14%. What would be your forecast of g?

Given the information below compute the value of a stock

Ks=13.4% N=3 years

gs=30% gn=8%

Do=$1.15


0
g_s = 30%
1
30%
2
30%
3
g_n = 8%
4
D_1 = 1.4950
D_2 = 1.9435
D_3 = 2.5266
D_4 = 2.7287
13.4%
1.3183
13.4%
1.5113
$\hat{P}_3$ = 50.5310
13.4%
36.3838
53.0576
39.2134 = $39.21 = $\hat{P}_0$

Step1. Calculate the dividends expected at the end of each year during the supernormal growth period.

$$D_1 = D_0(1 + g_s) = \$1.15(1.30) = \$1.4950$$

Step 2. Calculate the dividends from time 1 to infinity. First calculate Pv of the constant growth.

$$\hat{P}_3 = \frac{D_4}{K_s - g_n} = \frac{= \$2.7287}{0.134 - 0.08} = \$50.5310$$

Group Assignement

- **Form a group consisting 4 or 5 memebrs**
- **Explain the procedures how a new share company issues shares to the public for the first time in Ethiopia.**
- **NB: This term paper should include at least the following topics:**

I. **Introduction (i.e. general introduction, study objective, significance, & scope)**

II. **Review of related literature (at least include some important issues, which are relevant for the topic you are working on)**

III. **Methodology**

IV. **Analysis**

V. **Identified gaps (conclusion)**

VI. **The way forward as professional (recommendation)**

- **Submission Date: January 05/2020**

- Note that the *total cash flow* at time 3 consists of the sum of

$$D_3 + \hat{P}_3 = \$2.5266 + \$50.5310 = \$53.0576$$

Now discount the all the cash flows from starting from the 3rd year.

The PVs is the value of the supernormal growth stock, $39.21.

End of Part-I!!