Stock return and Valuation

Unit IV lecture 1

Valuation on the basis of accounting information

follows:

Net worth = Equity share capital+ reserves and surplus – accumulated losses

Therefore we can find book value of equity shares as follows:

$$= \frac{\text{Net Worth of the company}}{\text{Number of equity shares}}$$

$$= \frac{\text{Equity share capital+ reserves and surplus – accumulated losses}}{\text{Number of equity shares}}$$

Liquidation value

Liquidation value is that value which is based on the fact that in case a company liquidates then its assets will be realized for some value. The value or the amount of money received from the sale of assets will be utilized for the payment of secured and unsecured liabilities as well as preference share holders. now if any amount of money is left after the payment for settlement of claims of all the

Liquidation value

above mentioned sources of fund, this would be given to equity shareholders. Thus liquidation value of equity shares will be obtained as follows:

Liquidation Value =

$$\frac{\text{(Realized value of assets) – (payment to be made to secured and unsecured creditors) – (payment to preference share holders).}}{\text{Number of equity shares.}}$$

Liquidation value is a better measure than book value as it is based on current realizable values than historical values. But again it has problems:

(I) It is not easy to determine the realizable value of assets.

(ii) It is not based on earning capacity of the firm.

The Return on an Investment in Common Stock

- The future cash flows associated with stock ownership consists of
  - Dividends and
  - The eventual selling price of the shares
- If you buy a share of stock for price P_0, hold it for one year during which time you receive a dividend of D_1, then sell it for a price P_1, your return, k, would be:

$$k = \frac{D_1 + (P_1 - P_0)}{P_0}$$

or

$$k = \frac{D_1}{P_0} + \frac{(P_1 - P_0)}{P_0}$$

dividend yield — capital gains yield

A capital gain (loss) occurs if you sell the stock for a price greater (lower) than you paid for it.

Question

- Maruti Suzuki's Share share price on 1 April 2011was 1271, and the price on 9 march 2012 was 1341.90.The dividend received was 7.50. What is the holding period rate of return? Calculate the dividend yield and capital gain yield .
- R (stock's holding period return)= $\frac{P1-P0+D}{P0}$

Solution

$$\frac{(1341.90-1271.1)+7.5}{1271.1}$$

= 0.0616*100=6.16 percent

Dividend yield : D/P = 7.5/1271.10*100 = 0.59 percent

Capital gain yield = (1341.90-1271.10)/1271.10 *100 = 5.57percent

Anticipated Return

- It is the expected rate of return an investor will get in future on his investments.
- The anticipated rate of return can be calculated with the help of probability.
- Probability refers to the likelihood occurrence of an event.
- It can be calculated as:

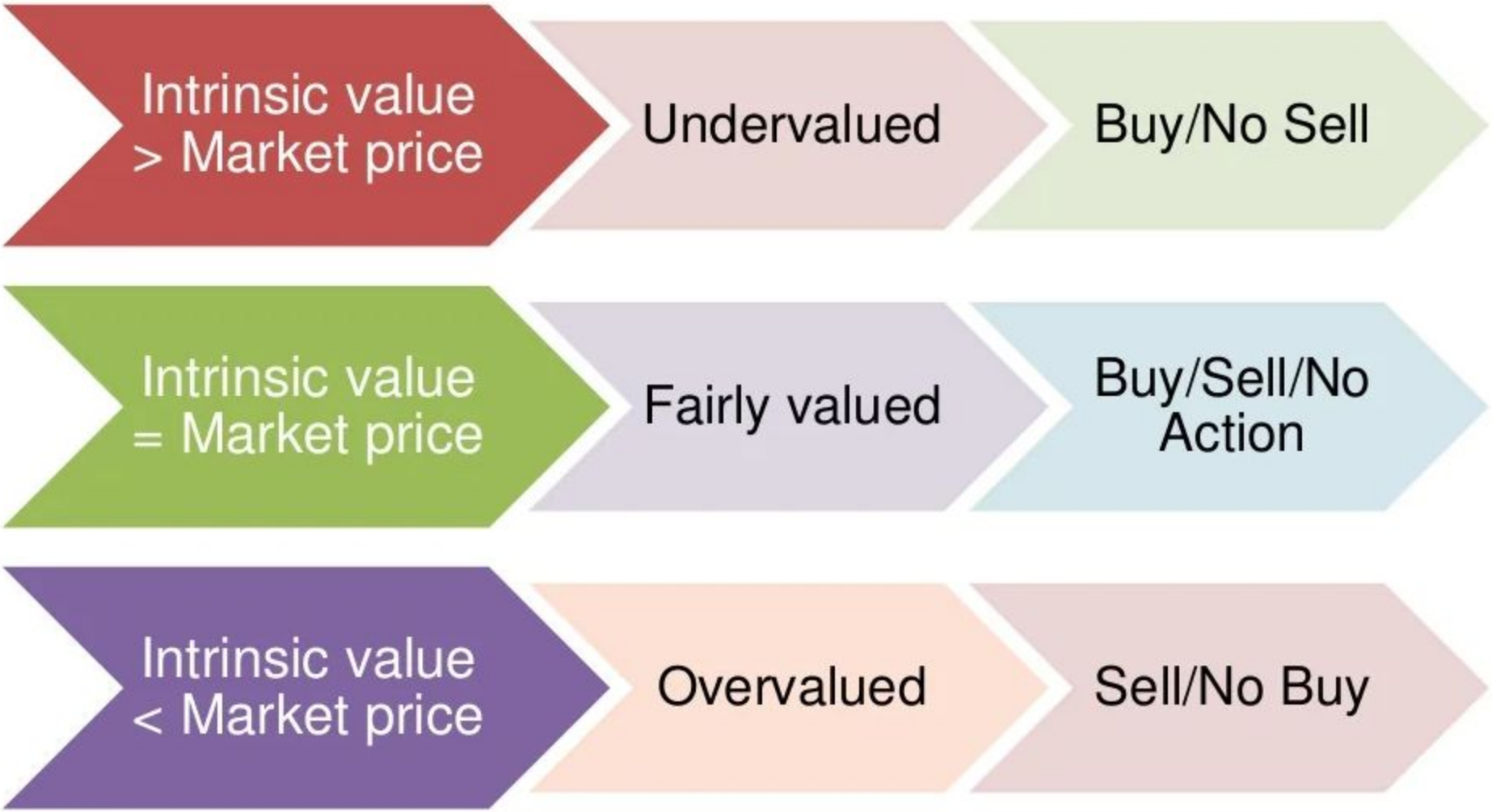
$$E(R) = \sum_{t=1}^{N} (\text{Probability } P_t)\,(\text{Return } R_t)$$

Anticipated return

- Probability describes the likelihood of occurrence of an event i.e the likelihood of getting a certain rate of return. The value of probability ranges from 0 to 1.
- The expected rate of return of any stock is weighted average rate of return. Probabilities of returns are used a

Return(Rt %)	Probability (Pt)	(Pt) (Rt)
10	0.1	1.0
11	0.2	2.2
12	0.4	4.8
13	0.2	2.6
14	0.1	1.4
		12

Valuation Decision



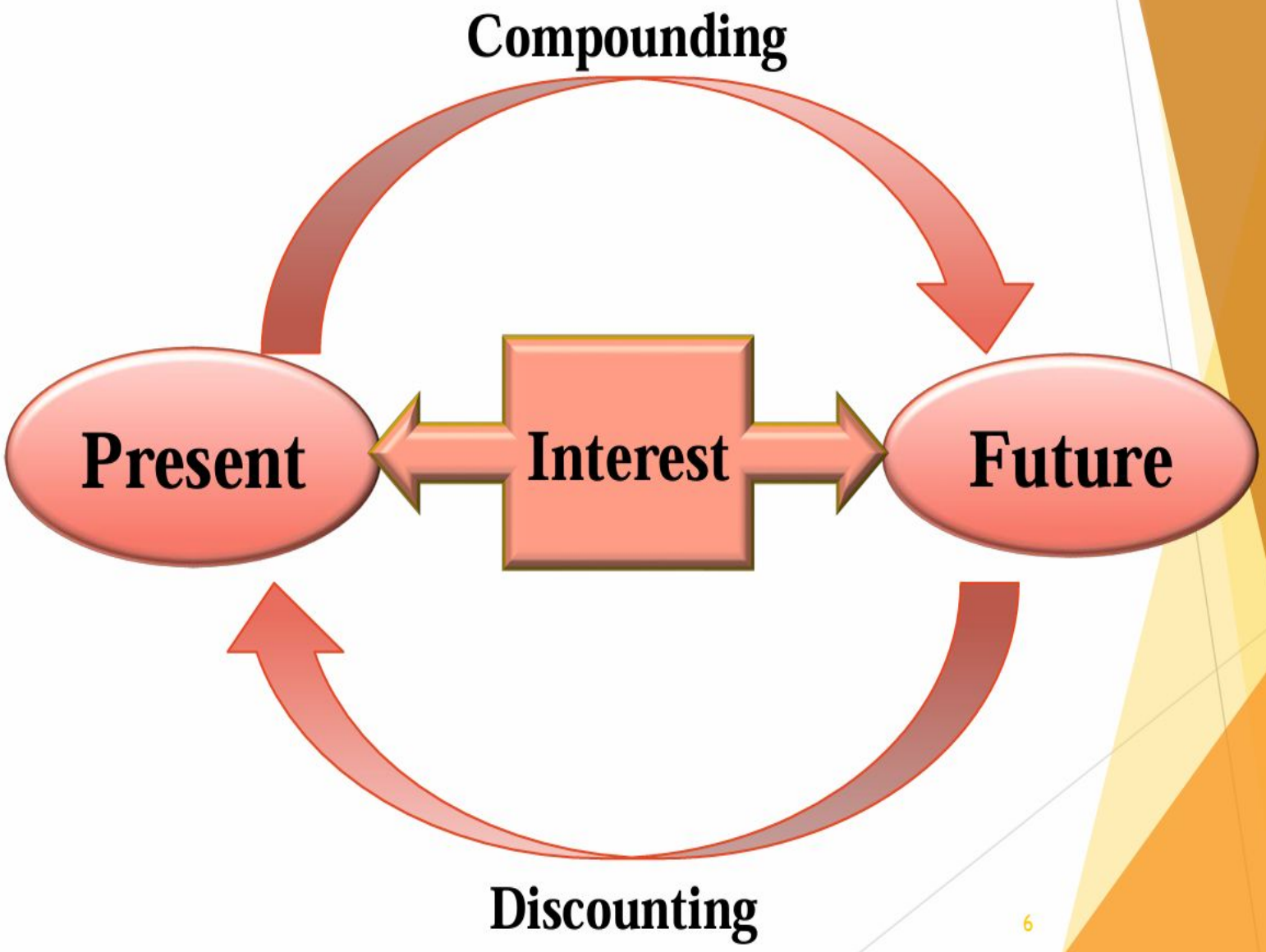
INTRINSIC VALUE OF EQUITY SHARE

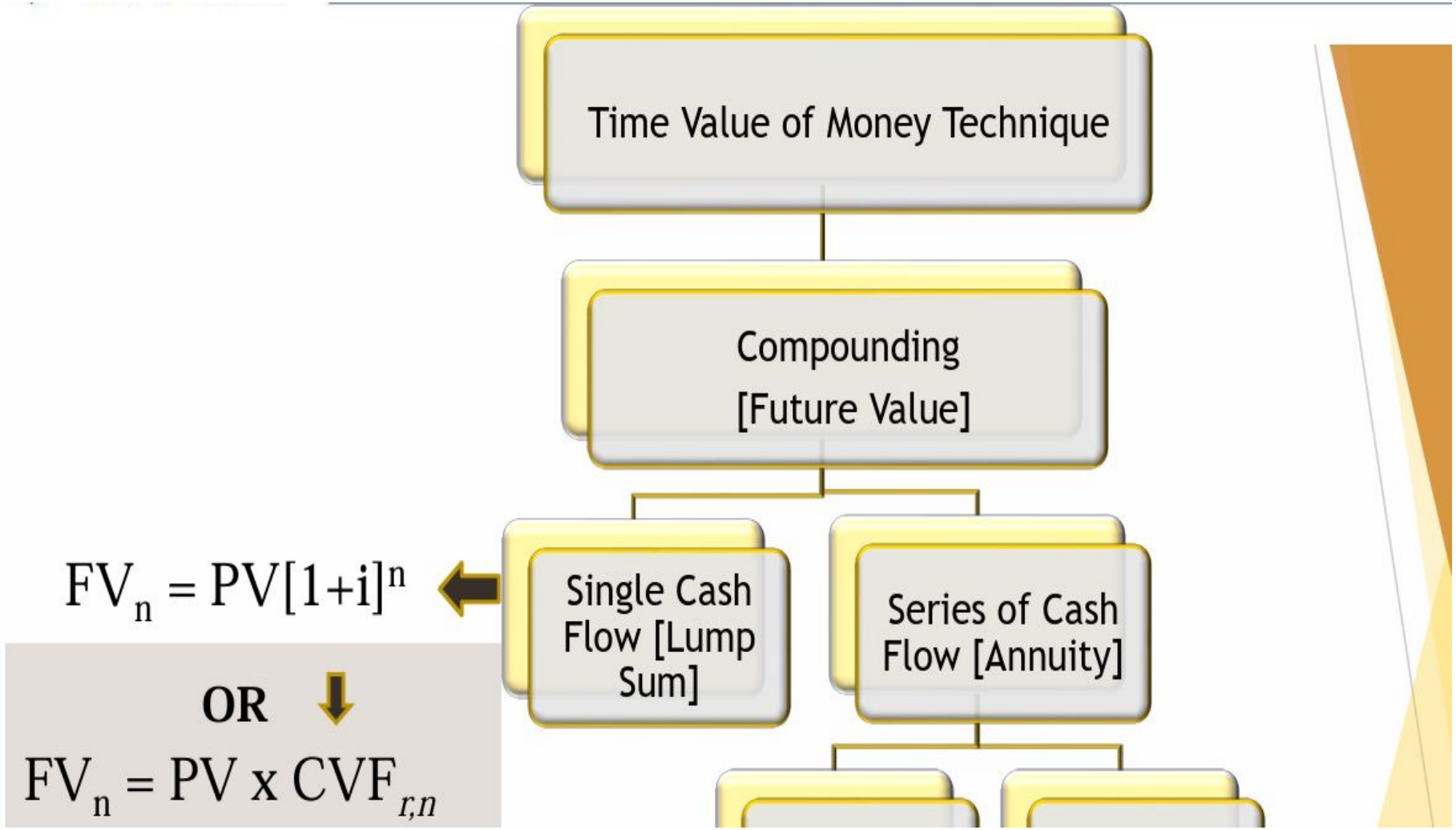
- Intrinsic value of equity share can be defined as the present value of all future cash inflows from the share discounted at an appropriate discount rate.
- The discount rate can be expected return from the share

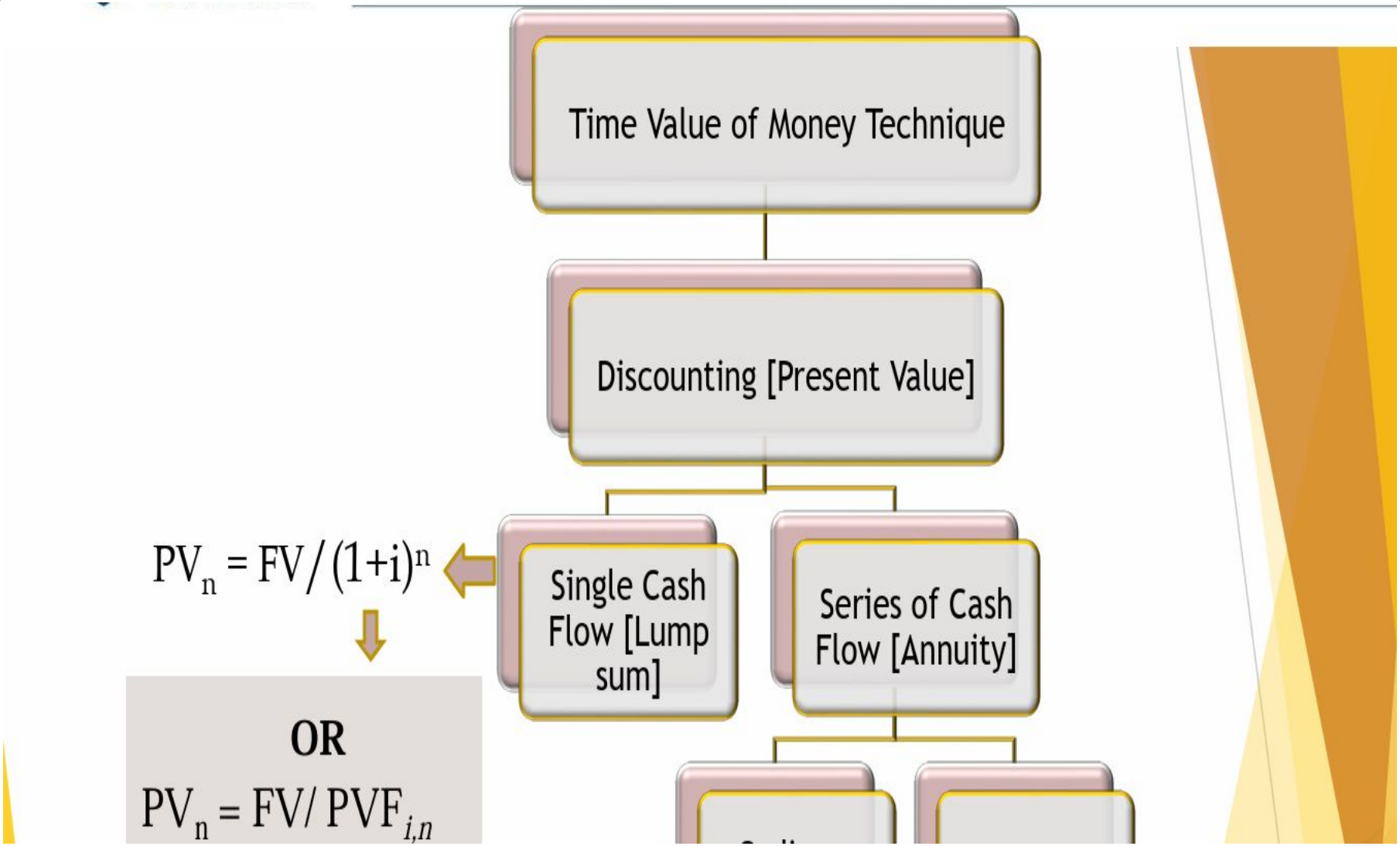
A rupee earned today is more valuable than a rupee a year hence.

WHY?

- Future uncertainties
- Preference for present consumption
- Reinvestment opportunities


Compounding
Present
Interest
Future
Discounting


Time Value of Money Technique
Compounding
[Future Value]
Single Cash Flow [Lump Sum]
Series of Cash Flow [Annuity]
$FV_n = PV[1+i]^n$
OR
$FV_n = PV \times CVF_{r,n}$


Time Value of Money Technique
Discounting [Present Value]
Single Cash Flow [Lump sum]
Series of Cash Flow [Annuity]
$PV_n = FV/(1+i)^n$
OR
$PV_n = FV/PVF_{i,n}$

The Intrinsic (Calculated) Value and Market Price

- A stock's intrinsic value is based on assumptions made by a potential investor

  Must estimate future expected cash flows

  - Need to perform a fundamental analysis of the firm and the industry

- Different investors with different cash flow estimates will have different intrinsic values

Single period valuation model

- It is assumed that the investor holds the stock for a year , and the return occurs at the end of the period, it has to be given in terms of the present value.

$P_0 = D_{1-} /(1+r) + P_1 /(1+r)$

P_0 = Present selling price

$P_{1=}$ Selling price at the end of 1 year

D_1 = Dividend received during the one year holding period

R = required rate of return.

Valuing common stock is tougher because:

1. The **size of the cash flows are uncertain**
2. **Timing** of the cash flows is not fixed and
3. The **required rate of return (K_e) is unknown**

1-year holding period –

Investor sells the share at the end of the first year.

Dividend is received for the first year and an year-end exit value is estimated

Both the cash flows are discounted at the required rate of return, calculated from a model such as CAPM.

$$\text{Value} = \frac{\text{dividend to be received}}{(1+k_e)^1} + \frac{\text{year} - \text{end Price}}{(1+k_e)^1}$$

Question

- If an investor wants to get 20 percent return by holding maruti suzuki stock for a year , he can find out whether the purchase price is high or low .
- Share price on 9 march = 1341.90
- Share price next year = 1650
- Assuming dividend = 7.5
- Return = 20 percent
- $P_{0 =}$ 7.5 /(1+0.2) + 1650 /(1+0.2) =6.25+1375= 1381.25
- 1341.90 < 1381.25

Example- Single Period Valuation

- Let us assume that an investor intends to buy a share and will hold it for one year. Suppose he expects the share to pay a dividend of Rs 2 next year, and would sell the share at an expected price of Rs 21 at the end of the year. If the investor's opportunity cost of capital or the required rate of return (*ke*) is 15 per cent, how much should he pay for the share today?

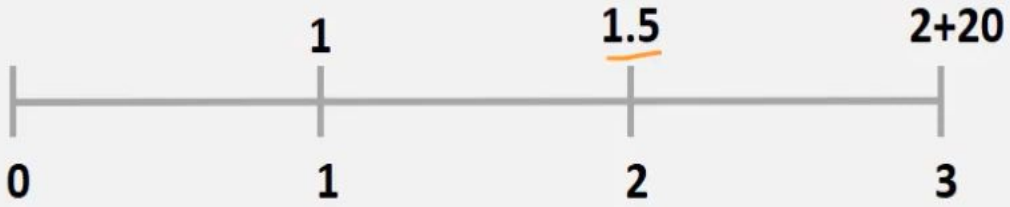
$$P_0 = \frac{\text{DIV}_1 + P_1}{1 + k_e}$$

$$P_0 = \frac{2 + 21}{1.15} = \text{Rs } 20$$

Example 1

- For the next three years, the annual dividends of a stock are expected to be €1.00, €1.50, and €2.0.
- The stock price is expected to be €20.00 at the end of three years.
- If the required rate of return on the shares is 10 percent, what is the estimated value of a share?

Solution



$$V_0 = \frac{1.0}{1.1} + \frac{1.5}{1.1^2} + \frac{2.0 + 20}{1.1^3} = €18.67$$

Dividend discount model

- the dividend discount model (DDM) is a quantitative method used for predicting the price of a company's stock based on the theory that its present-day price is worth the sum of all of its future dividend payments when discounted back to their present value.
- It attempts to calculate the fair value of a stock irrespective of the prevailing market conditions and takes into consideration the dividend payout factors and the market expected returns.
- If the value obtained from the DDM is higher than the current trading price of shares, then the stock is undervalued and qualifies for a buy, and vice versa.

Dividend discount model

- A company produces goods or offers services to earn profits. The cash flow earned from such business activities determines its profits, which gets reflected in the company's stock prices.
- Companies also make dividend payments to stockholders, which usually originates from business profits.
- **The DDM model is based on the theory that the value of a company is the present worth of the sum of all of its future dividend payments.**

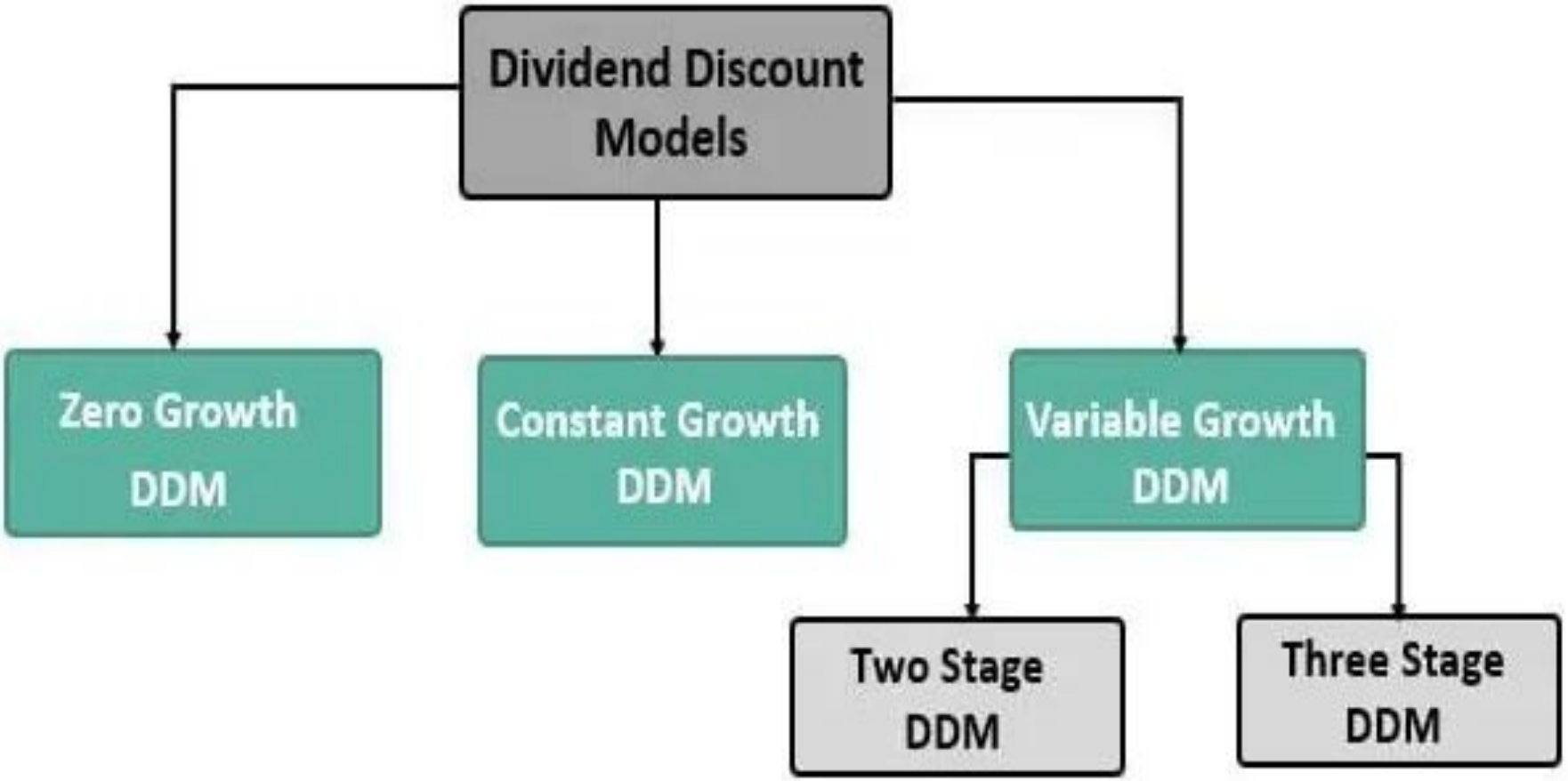
Dividend discount model

- One can assume that the company has a fixed growth rate of dividends until perpetuity, which refers to a constant stream of identical cash flows for an infinite amount of time with no end date.
- For example, if a company has paid a dividend of Rs1 per share this year and is expected to maintain a 5% growth rate for dividend payment, the next year's dividend is expected to be Rs1.05.

Discounting Factor

- Shareholders who invest their money in stocks take a risk as their purchased stocks may decline in value. Against this risk, they expect a return/compensation.
- A firm's cost of equity capital represents the compensation the market and investors demand in exchange for owning the asset and bearing the risk of owners.

Dividend Discount Model (DDM)



Dividend discount model

- **Zero-Growth Dividend Discount Model –** This model assumes that all the dividends paid by the stock remain the same forever until infinite.
- **Constant Growth Dividend Discount Model –** This dividend discount model assumes dividends grow at a fixed percentage. They are not variable and are consistent throughout.
- **Variable Growth Dividend Discount Model or Non-Constant Growth –** This model may divide the growth into two or three phases. The first one will be a fast initial phase, then a slower transition phase, and ultimately ends with a lower rate for the infinite period.

Zero-growth Dividend Discount Model

- The zero-growth model assumes that the dividend always stays the same, i.e., there is no growth in dividends. Therefore, the stock price would be equal to the annual dividends divided by the required rate of return.
- **Stock's Intrinsic Value = Annual Dividends / Required Rate of Return**
- This model can be used to price preferred stock, which pays a dividend that is a specified percentage of its par value. A stock based on the zero-growth model can still change in price if the required rate changes when the perceived risk changes.

Zero Growth Dividend Discount Model

- If a **preferred share** of stock pays dividends of Rs1.80 per year, and the required rate of return for the stock is 8%, then what is its intrinsic value?

Solution:

- Here, we use the dividend discount model formula for zero growth dividends:
- **Dividend Discount Model Formula =**
- **Intrinsic Value = Annual Dividends / Required Rate of Return**
- Intrinsic Value = Rs1.80/0.08 = Rs22.50.
- The shortcoming of the model above is that you would expect most companies to grow over time.

question

- The current stock price of largest , Inc. is Rs44.72 if the required rate of return is 19% what is the dividend paid by this firm, Which is not expected to grow in the near future.

P0= D/R = 44.72= D/0.19 =8.50

- Suppose a stock is expected to pay Rs. 0.50 dividend every quarter and required rate of return is 10% .What is the price.
- P0= D/R = P0=0.50/0.10

Constant-Growth Rate DDM Model

- The constant-growth dividend discount model assumes dividends grow by a specific percentage each year.
- Constant-growth models can value mature companies whose dividends have increased steadily.
- **In Constant-growth Dividend Discount Model, we do assume that the growth rate in dividends is constant; however, the actual dividends outgo increases each year.**
- **Dividends' growth rates are generally denoted as g, and Ke indicates the required rate. Another important assumption you should note is that the necessary rate or Ke remains constant every year.**

Valuing Common Stock using DDM (Cont.)

Infinite Period –

$$\text{Value} = \frac{D_1}{(1+k_e)^1} + \frac{D_2}{(1+k_e)^2} + \cdots + \frac{D_\infty}{(1+k_e)_\infty}$$

Assuming that the dividends grow at a constant rate of 'g' forever, the above is simplified as:

$$\text{Value}_0 = \frac{D_0(1+g)}{(k_e - g)} = \frac{D_1}{(k_e - g)}$$

This is known as the Constant Growth model or the Gordon Growth Model.

- The value of share is arrived at a time zone preceding the year for which dividend has been taken in the numerator.
- We can apply the above formula only from the year in which the growth rate becomes constant.
- Using the above model for preference share valuation, the value of g = 0.

The Constant Growth Model

- If dividends are assumed to be growing at a constant rate forever and we know the last dividend paid, D_0, then the model simplifies to:

- **Which represents a series of fractions as follows**

$$P_0 = \frac{D_0(1+g)}{(1+k)} + \frac{D_0(1+g)^2}{(1+k)^2} + \frac{D_0(1+g)^3}{(1+k)^3} + \ldots \infty$$

- **If k>g the fractions get smaller (approach zero) as the exponents get larger**
  - **If k>g growth is normal**
  - **If k<g growth is supernormal**
    - **Can occur but lasts for limited time period**

What happens if $g > k_s$?

- **If $k_s < g$, get negative stock price, which is nonsense.**

$$\hat{P}_0 = \frac{D_1}{k_s - g} \text{ requires } k_s > g.$$

- We can't use model unless (1) $k_s > g$ and (2) g is expected to be constant forever.

Constant-Growth Rate DDM Model

- The constant-growth dividend discount model or DDM model gives us the present value of an infinite stream of dividends growing at a constant rate.
- The constant-growth dividend discount model formula

$$Value\_stock = \frac{D_0(1+g)}{(K_e - g)} = \frac{D_1}{(K_e - g)}$$

- D1 = Value of dividend to be received next year
- D0 = Value of dividend received this year
- g = Growth rate of dividend
- Ke = Discount rate

Constant Normal Growth—Example

Example

Q: Atlas Motors is expected to grow at a constant rate of 6% a year into the indefinite future. It recently paid a dividends of Rs2.25 a share. The rate of return on stocks similar to Atlas is about 11%. What should a share of Atlas Motors sell for today?

A:

$$P_0 = \frac{D_1}{k - g}$$

$$= \frac{\$2.25\ (1.06)}{.11 - .06}$$

$$= \$47.70$$

question

- If a stock pays a Rs4 dividend this year, and the dividend has been growing 6% annually, what will be the stock's intrinsic value, assuming a required rate of return of 12%?
- D1 = Rs4 x 1.06 = Rs4.24
- Ke = 12%
- Growth rate or g = 6%
- Intrinsic stock price = Rs4.24 / (0.12 – 0.06) = Rs4/0.06 = Rs70.66

question

- If a stock sells at Rs315 and the current dividends are Rs20. What might the market assume is the growth rate of dividends for this stock if the required return rate is 15%?
- In this example, we will assume that the **market price** is the intrinsic value = Rs315
- Rs315 = Rs20 x (1+g) / (0.15 – g)
- If we solve the above equation for g, we get the **implied growth rate of 8.13%**.

EXAMPLE 01

Palmgor Capital's shareholders require a minimum return of 18%. The company last paid out a dividend of R6 per share, which is expected to increase by 10% per annum.

Required

What is the value of a share using the Dividend (Gordon) Growth model?

$P_0 = d_1 / ke - g$

$d_1 = d_0 (1+g)$ $D_1 = R6 (1+0.10) = 6.6$

$ke - g$ $0.18 - 0.10 = 0.08$

$P_0 = 6.6/0.08 = R82.5$

EXAMPLE 02

Palmgor Capital's shares are currently trading at R75 per share. The company last paid out a dividend of R6 per share, which is expected to increase by 10% per annum.

Required

What is the cost of equity (required rate of return)?

$P_0 = d_1 / ke - g$

$Ke = [d_1 / P_0] + g$

$Ke = [6 (1+ 0.10) / R75] + 0.10 = 18.8\%$

Variable-Growth Rate DDM Model

- The variable-growth rate dividend discount model is much closer to reality than the other two types of dividend discount models. This model solves the problems related to unsteady dividends by assuming that the company will experience different growth phases.
- Variable growth rates can take different forms; you can even assume that the growth rates vary for each year. However, the most common form is one that thinks of three different rates of growth:
- An initial high rate of growth
- A transition to slower growth
- A sustainable, steady rate of growth
- The constant-growth rate model is primarily extended, with each phase of growth calculated using the constant-growth method but using different growth rates for the different phases. Finally, the present values of each stage are added together to derive the stock's intrinsic value.

Two-stage DDM

- This model is designed to value the equity in a firm with two stages of growth,
- an initial period of higher growth and
- a subsequent period of stable growth.
- Two-stage dividend discount model is best suited for firms paying residual cash in dividends while having moderate growth.

XYZ Company recently paid a dividend of ₹ 10 per share (D_0). It anticipates that it will be able to grow the dividends @ 10% for the next 2 years. After the first 2 years, dividend will grow @ 5% forever. If discount rate (K_e) = 8% p.a. you are required to calculate the intrinsic value (IV_0) of the share of XYZ Company.

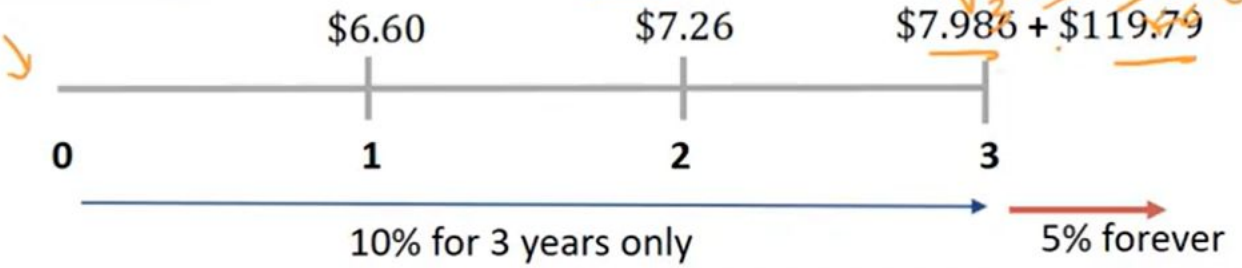
- D0=10
- D1=11
- D2=12.10 (TERMINAL VALUE)
- D3=12.705
- P2= D3/(Ke-G)
- P2= 423.50
- IV= PV of D1+PV of D2+PV of P2

IV =383.64

Two-Stage Dividend Discount Model

Example 2

The current dividend, D_0, is **$6.00.** Growth is expected to be **10 percent** a year for three years and then **5 percent** thereafter. The required rate of return is **12 percent.** Estimate the intrinsic value.



Solution

$$D_1 = \$6.00(1 + 0.10) = \$6.60$$

$$D_2 = \$6.00(1 + 0.10)^2 = \$7.26$$

$$D_3 = \$6.00(1 + 0.10)^3 = \$7.986$$

$$D_4 = \$6.00(1 + 0.10)^3(1 + 0.05) = \$8.3853$$

$$V_3 = \frac{\$8.3853}{0.12 - 0.05} = \$119.79$$

$$\text{Value}_0 = \frac{D_0(1+g)}{(k_e - g)} = \frac{D_1}{(k_e - g)}$$

Two-stage DDM

- **Assumptions**
- A higher growth rate is expected in the first period.
- This higher growth rate will drop to a stable growth rate at the end of the first period.
- The **dividend payout ratio** is consistent with the expected growth rate.

Steps

- CheckMate forecasts that its dividend will grow at 20% per year for the next four years before settling down at a constant 8% forever. Dividend (current year,2016) = Rs12; expected rate of return = 15%. What is the value of the stock now?
- **Step 1**: **Calculate the dividends for each year till the stable growth rate is reached**
- The first value component is the present value of the expected dividends during the high growth period. For example, on the current dividends (Rs12) basis, the expected growth rate (15%) value of dividends (D1, D2, D3) can be computed for each year in the high growth period.
- A stable growth rate is achieved after 4 years. Hence, we calculate the dividend profile until 2010.

- **Step 2: Apply the dividend discount model to calculate the terminal value (price at the end of the high growth phase)**
- In this example, the dividend growth is constant for the first four years, then decreases. So, we can calculate the price that a stock should sell for in four years, i.e., the terminal value at the end of the high growth phase (2020). That can be estimated using the constant-growth dividend discount model formula: –

- **Step 3: Find the present value of all the projected dividends**

- **Step 4: Find the present value of the terminal value**

- **Step 5: Find the fair value – the PV of projected dividends and the PV of terminal value**
- As we already know, the stock's intrinsic value is the present value of its future cash flows. Therefore, since we have calculated the present value of dividends and the present value of **terminal value**, the total of both will reflect the **fair value** of the stock.
- Fair Value = PV(projected dividends) + PV(terminal value)

Non Constant Growth

- Suppose a company will pay following dividend for next 3 years:

Year	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 percent per year. The required return is 10 percent. What is the value of the stock today?

$$P_0 = \frac{D_1}{(1+r)^1} + \frac{D_2}{(1+r)^2} + \frac{D_3}{(1+r)^3} + \frac{P_3}{(1+r)^3}$$

$$P_3 = \frac{D_4}{R-g} = \frac{D_3*(1+g)^1}{R-g}$$

$$P_3 = \frac{2.5*(1+.05)^3}{.10-.05}$$

$$P_0 = \frac{1}{(1+.10)^1} + \frac{2}{(1+.10)^2} + \frac{2.5}{(1+.10)^3} + \frac{57}{(1+.10)^3}$$

$$P_3 = 57$$

Question

Frazier Inc. paid a dividend of Rs4 last year (D_0). The firm is expecting dividends to grow at 21% in years 1–2 and 10% in Year 3. After that growth will be constant at 8% per year. Similar investments return 14%. Calculate the value of the stock today.

a.Rs71.49

b.Rs88.31

c.Rs91.47

d.Rs116.10

ANS: C

$D_1 = 4(1.21) = 4.84$

$D_2 = D_1(1.21) = 5.8564$

$D_3 = D_2(1.10) = 6.442$

$D_4 = D_3(1.08) = 6.9574032$

$P_3 = [D_4]/(.14 - .08) = 115.95672$

$6.44 + 115.96 = 122.40$

Calculator Steps:

CFo = 0, $C_{01} = 4.84$, $C_{02} = 5.86$, $C_{03} = 122.40$; I = 14

Solve for NPV = Rs91.37

Two Stage Growth—Example

Example

Q: Zylon Corporation's stock is selling for Rs48 a share. We've heard a rumor that the firm will make an exciting new product announcement next week. By studying the industry, we've concluded that this new product will support an overall company growth rate of 20% for about two years. After that, we feel growth will slow rapidly and level off at about 6%. The firm currently pays an annual dividend of Rs2.00, which can be expected to grow with the company. The rate of return on stocks like Zylon is approximately 10%. Is Zylon a good buy at Rs48?

A: We'll estimate what we think Zylon should be worth given our expectations about growth.

Two Stage Growth—Example

Example

We'll develop a schedule of expected dividend payments:

Year	Expected Dividend	Growth
1	Rs2.40	20%
2	Rs2.88	20%
3	Rs3.05	6%

Next, we'll use the constant growth model at the point in time where the growth rate changes and constant growth begins. That's year 2, so:

$$P_2 = \frac{D_3}{k - g_2} = \frac{\$3.05}{.10 - .06} = \$76.25$$

Do time line and PV on the board

- $CF_0 = 0$
- $CF_1 = 2.40$
- $CF_2 = 2.88 + 76.32 = 79.20$
- $K_s = 10\%$
- NPV =?= 67.64

A report of July, 2018 states that rate of return of National Fertilizers Ltd. Stock for past 5 years is 18.58%. This is assumed to continue for next 5 years & after that r is assumed to have a growth rate of 10% indefinitely. The dividend paid for the year 2017-18 is 18%. Required rate of return is 20%. The price is Rs. 18 on 4-7-18. estimate the stock price. Assume F.V. as Rs. 10.

Three stage Dividend Discount Model

- One improvement that we can make to the two-stage DDM model is to allow the growth rate to change slowly rather than instantaneously.
- The three-stage dividend discount model or DDM model is given by: –
- **First phase:** There is a constant dividend growth (g1) or with no dividend.
- **Second phase:** There is a gradual dividend decline to the final level.
- **Third phase:** There is a constant dividend growth again (g3), i.e., the growth company opportunities are over.

Three stage Dividend Discount Model

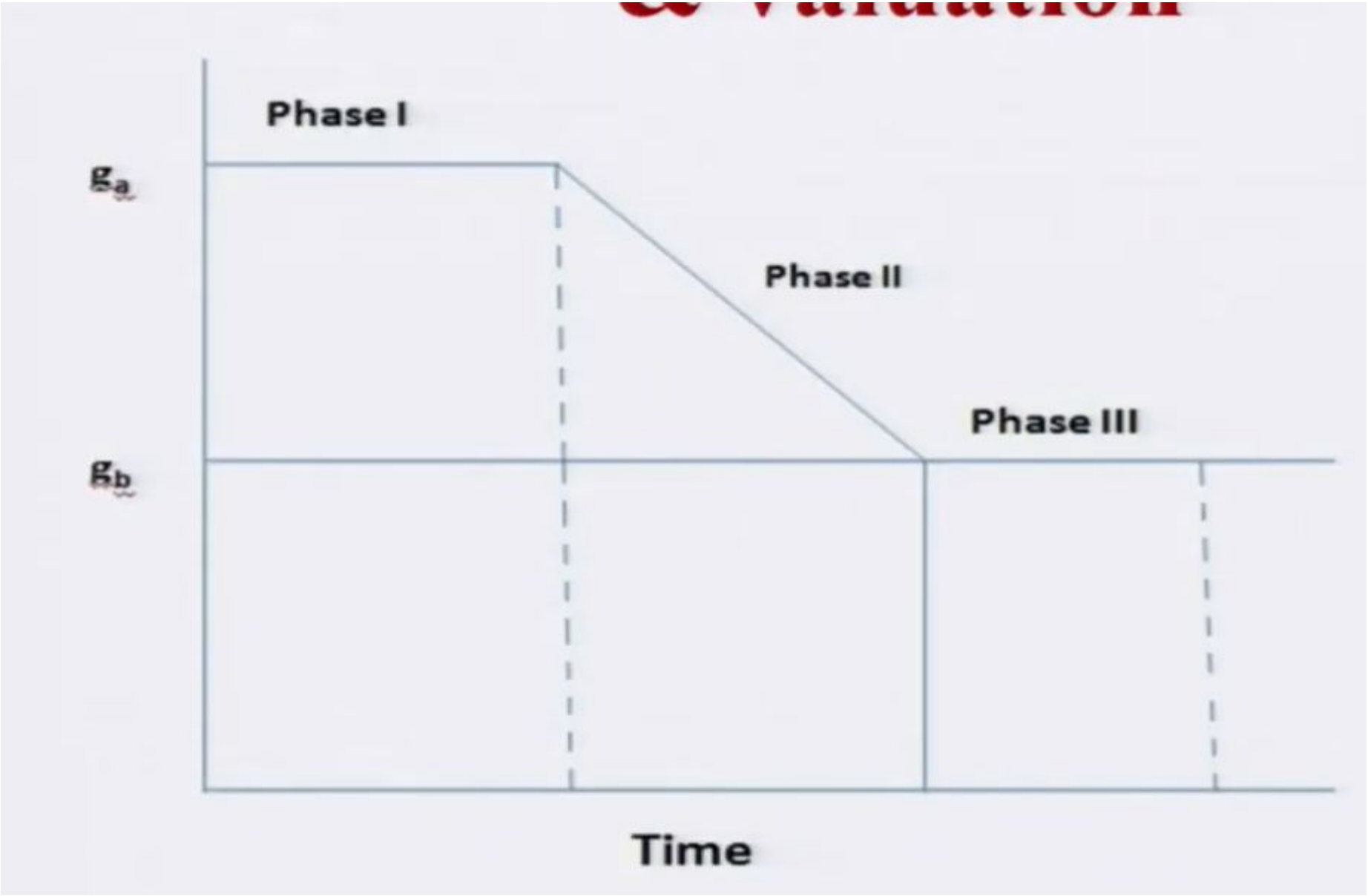
- One can similarly apply the logic we applied to the two-stage model to the three-stage model. Below is the dividend discount model formula for using the three-s

$$V_0 = \sum_{t=1}^{T} \frac{D_0(1+g_1)^t}{(1+k)^t} + \sum_{t=T+1}^{N} \frac{D_t}{(1+k)^t} + \frac{D_{N+1}}{(k-g_3)(1+k)^N}$$

- The only change will be one more growth rate between the high growth phase and the stable phase. It would help if you found out the respective dividends and their present values for this growth rate.

It is assumed that dividend growth rate has three phases.

- **First phase: Dividends are assumed to grow at constant rate 'g' for a period of 'A' years**
- **After phase 'A', the growth rate declines for A+1 years throughout phase B. (the decline of dividend rate is linear)**
- **Afterwards there would be perpetual growth rate 'g_n'. (firm's long-run normal growth rate)**


Phase I
g_a
Phase II
Phase III
g_b
Time

$$P_0 = \sum_{t=1}^{A} \frac{D_0(1+g_a)^t}{(1+r)^t} + \sum_{t=A+1}^{B} \frac{D_{t-1}(1+g_b)}{(1+r)^t} + \frac{D_B(1+g_n)}{r - g_n(1+r)^B}$$

A B C

Where; D_0 = next years dividend

g_a = Period 'A' growth rate

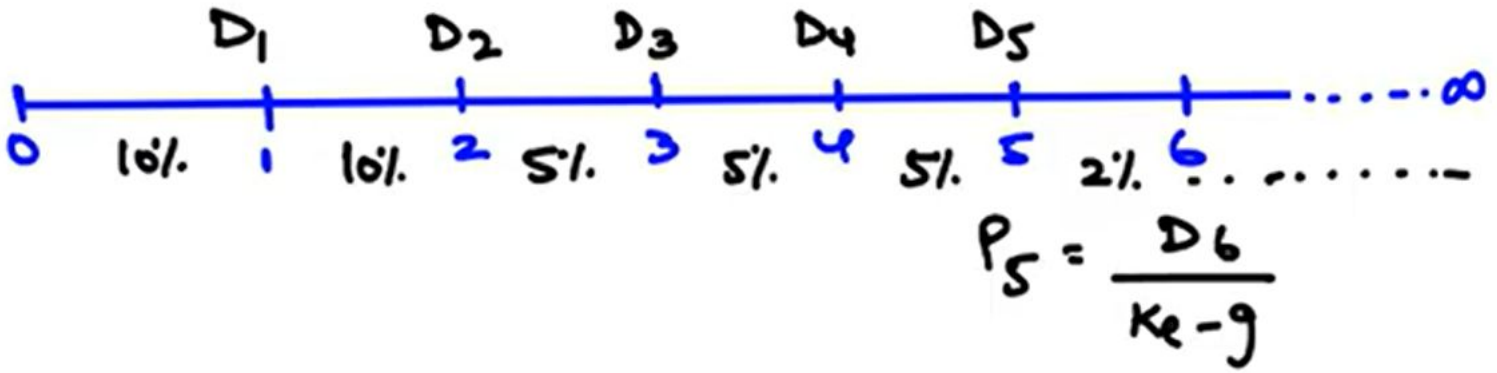
g_b = Period 'B' growth rate

g_n = growth rate of third phase

D_B = dividend at the beginning of third phase

• Formula

XYZ Company recently paid a dividend of ₹ 10 per share (D_0). It anticipates that it will be able to grow the dividends @ 10% for the next 2 years. After the first 2 years, dividend will grow @ 5% for 3 more years. After the first 5 years, dividends will grow perpetually @ 2%. If discount rate (K_e) = 8% p.a. you are required to calculate the intrinsic value (IV_0) of the share of XYZ Company.



$D_1 = 11$

$D_2 = 12.10$

$D_3 = 12.10(1.05) = 12.705$

$D_4 = 12.705(1.05) = 13.34$

$D_5 = 13.34(1.05) = 14.00$

$D_6 = 14.00(1.02) = 14.28$

$$P_5 = \frac{D_6}{k_e - g}$$

$$= \frac{14.28}{0.08 - 0.02}$$

$$IV_0 = \frac{D_1}{(1+Ke)^1} + \frac{D_2}{(1+Ke)^2} + \frac{D_3}{(1+Ke)^3} + \frac{D_4}{(1+Ke)^4} + \frac{D_5}{(1+Ke)^5} + \frac{P_5}{(1+Ke)^5}$$

$$= \frac{11}{(1.08)^1} + \frac{12.10}{(1.08)^2} + \frac{12.705}{(1.08)^3} + \frac{13.34}{(1.08)^4} + \frac{14}{(1.08)^5} + \frac{238}{(1.08)^5}$$

$$= 10.19 + 10.37 + 10.08 + 9.805 + 9.527 + 161.96$$

$$= ₹\ 211.94$$

Eva Corp. is experiencing rapid growth. Dividends are expected to grow at 25 percent per year during the next three years, 15 percent over the following year, and then 8 percent per year indefinitely. The required return on this stock is 13 percent, and the company just paid a $ 2.73 dividend, what is the current share price?

	Year	Growth Years	Dividend	PV of Dividend
	0		2.73	
25%	1	1	3.4125	$3.02
	2	2	4.26563	$3.34
	3	3	5.33203	$3.70
15%	4	1	6.13184	$3.76
8%		Constant Growth	6.62238	$81.23
		Terminal Value	132.448	

- 95.05

Valuation through P/E ratio

Common stock value—Variable growth Newman Manufacturing is considering a cash purchase of the stock of Grips Tool. During the year just completed, Grips earned $4.25 per share and paid cash dividends of $2.55 per share ($D_0$ = $2.55). Grips' earnings and dividends are expected to grow at 25% per year for the next 3 years, after which they are expected to grow at 10% per year to infinity. What is the maximum price per share that Newman should pay for Grips if it has a required return of 15% on investments with risk characteristics similar to those of Grips?

Preferred Stock Valuation

- Preferred stocks are those stocks that provide a steady rate of return.
- Preferred stocks can be calculated with the help of the following formula:

$$P_0 = \frac{D}{r}$$

where D = dividend paid

r = required rate of return

Valuation of Preference Shares

- The value of the preference share would be the sum of the present values of dividends and the redemption value.
- A formula similar to the valuation of bond can be used to value preference shares with a maturity period:

$$P_0 = \sum_{t=1}^{n} \frac{\text{PDIV}_1}{(1+k_p)^t} + \frac{P_n}{(1+k_p)^n}$$

- Suppose an investor is considering the purchase of a 12-year, 10 per cent Rs 100 par value preference share. The redemption value of the preference share on maturity is Rs 120. The investor's required rate of return is 10.5 percent. What should she be willing to pay for the share now? The investor would expect to receive Rs 10 as preference dividend each year for 12 years and Rs 110 on maturity (i.e., at the end of 12 years). We can use the present value annuity factor to value the constant stream of preference dividends and the present value factor to value the redemption payment.

$$P_0 = 10 \times \frac{1}{0.105} - \frac{1}{0.105 \times (1.105)^{12}} + \frac{120}{(1.105)^{12}}$$

$$= 10 \times 6.506 + 120 \times 0.302 = 65.06 + 36.24 = \text{Rs } 101.30$$

Note: that the present value of Rs 101.30 is composite of the present value of dividends, Rs 65.06 and the present value of the redemption value, Rs 36.24. The Rs 100 preference share is worth Rs 101.3 today at 10.5 per cent required rate of return. The investor would be better off by purchasing the share for Rs 100 today.