

SECURITY VALUATION + BUSINESS VALUATION

Equity Valuation

1) Dividend Discount Model (DDM)

$$\text{Intrinsic value of share at time } t=0 \text{ (IV}_0\text{)} \\ = \frac{D_1}{1+R_e} + \frac{D_2}{(1+R_e)^2} + \frac{D_3}{(1+R_e)^3} + \dots$$

$D_1, D_2, D_3, \dots \rightarrow$ forecasted Dividends
 $R_e \rightarrow$ Required rate of return

ii) No growth DDM

Here, dividend payout ratio = 100%.

$$\therefore \text{DPS} = \text{EPS}$$

$$\boxed{\text{IV}_0 = \frac{\text{EPS}}{R_e}} = \frac{\text{DPS}}{R_e}$$

eg A Ltd. is a no growth firm with EPS = 100.
Equity capitalisation rate = 12%.

Find the price at which stock of A Ltd. is presently trading.

$$EPS = 100, \quad R_e = 12\%$$

$$IV_0 = P_0 = \frac{EPS}{R_e} = \frac{100}{0.12}$$

$$= ₹833.33$$

ii) Constant Growth DDM

$$IV_0 = \frac{D_1}{R_e - g}$$

Where R_e = equity capitalisation rate

g = sustainable growth rate

D_1 = Expected Dividend

eg A Ltd. pays a dividend of ₹20/share.
This is expected to grow @ 10% p.a forever.
If required rate of return is 15% find out the intrinsic value of share.

$$D_0 = 20$$

$$g = 10\% = 0.1$$

$$R_e = 15\% = 0.15$$

$$D_1 = D_0(1+g)$$

$$= 20(1+0.1)$$

$$= 22$$

$$IV_0 = \frac{D_1}{R_e - g} = \frac{22}{0.15 - 0.1} = \boxed{\text{₹}440}$$

Sustainable growth rate [Refer Question 5]

$$g = b \times r$$

Where b = Retention ratio = $1 -$ Dividend payout ratio

r = Return on Equity (ROE)

$$ROE = \frac{PAT}{\text{Net worth}} \quad \text{or} \quad \frac{EPS}{BUPS}$$

iii) Multiple Growth DDM

[Refer Question 2]

Comparison b/w $E(R)$ & R_e

- Expected Rate of Return ($E(R)$) is Internal Rate of Return (IRR) of the stock.

PV of Outflows = PV of Inflows

$$P_0 = \frac{D_1}{1+E(R)} + \frac{D_2}{[1+E(R)]^2} + \dots$$

With the help of interpolation we then find the $E(R)$.

For constant growth model -

$$P_0 = \frac{D_1}{E(R) - g}$$

$$E(R) = \frac{D_1}{P_0} + g$$

- Required Rate of Return (R_e) is the rate of return required by the investor for the risk which he is willing to take.

$$IV_0 = \frac{D_1}{R_e - g}$$

NOTE: If $P_0 > IV_0$ implies $E(R) < R_e$ and stock is overvalued and investor should take short position.

If $P_0 < IV_0$ implies $E(R) > R_e$ and stock is undervalued and investor should take long.

CA FINAL AFM

FULL AFM IN 10 DAYS

WHY JOIN US?

- Conceptual Clarity
- Writing Practice of Super Important 250+ Questions
- 2 Full Course Mock Test with Evaluation Sessions
- Coloured Concept Book & Question Bank



Register at:

www.letslearnindia.in | 8448448919

CA Shubham Agrawal



**JUST AT
4750/-**



position.

Important points from comparison of ROE & Re

	<u>NPV</u>	<u>Conclusion</u>
i) $ROE > Re$	positive	growth will create value for investors
ii) $ROE = Re$	zero	growth will have no effect on value
iii) $ROE < Re$	negative	growth will destroy investor's wealth

eg # EPS of A Ltd. of next year is expected to be ₹ 15/share. Payout ratio = 100%. and $Re = 12\%$. Calculate share price at time $t=0$.

Additional information -

Now taking ROE as ① 15%. ② 12%. and ③ 10%. and payout ratio = 75%. Calculate share price at time $t=0$ in each of the 3 cases.

Also calculate Present Value of Growth Opportunities in all the 3 cases.

$$\text{Share price at } t=0 = \frac{\text{EPS}}{R_e}$$

$$= \frac{15}{12\%}$$

$$= ₹ 125 / \text{share}$$

	<u>Case 1</u>	<u>Case 2</u>	<u>Case 3</u>
ROE (r)	15%	12%	10%
Retention ratio (b)	0.25	0.25	0.25
$g = b \times r$	3.75%	3%	2.5%
$D_1 = (\text{EPS})_{t=1}$ × payout ratio	11.25	11.25	11.25

Share price at $t=0$	$\frac{136.36}{12\% - 3.75\%}$	$\frac{125}{12\% - 3\%}$	$\frac{118.42}{12\% - 2.5\%}$
----------------------	--------------------------------	--------------------------	-------------------------------

PV60

11.36

0

-6.58

Required rate of return not given in question but R_m , R_f and β of stock is given then R_e is computed with the help of CAPM.

$$R_e = R_f + (R_m - R_f)\beta$$

where R_f = Risk free rate of return /
yield on Govt. securities

R_m = Return on market portfolio

β = Beta of stock

$R_m - R_f$ = Market risk premium

$(R_m - R_f)\beta$ = Security risk premium

Free Cash Flow

Types of FCF

→ Free cash flow
for firm
(FCFF)

Free cash flow
for equity
(FCFE)

→ Discount FCFF @ K_c

Discount FCFE @ K_e

→ Gives value of firm

Gives value of equity

NOTE : Value of equity under FCFF = Value of firm - Value of debt

Value of firm / Enterprise value under FCFF

$$= \frac{FCFF_1}{1+K_c} + \frac{FCFF_2}{(1+K_c)^2} + \dots$$

$$K_c = w_d K_d + w_e K_e$$

where w_d = weight of debt

w_e = weight of equity

K_d = post tax cost of debt

K_e = cost of equity

For computation of K_c , weights of equity and debt are determined as per target capital structure ①. If it is not given then as per ② market value and if that is also not given then as per book value ③.

Calculation of FCFF

Sales	xxx
Less: Operating expenses excluding depreciation	(xxx)
EBDIT	xxx
Less: Depreciation	(xxx)
EBIT	xxx

$$\textcircled{\text{I}} \quad \boxed{\text{NOPAT} = \text{EBIT} (1 - t)}$$

$$\textcircled{\text{II}} \quad \boxed{\text{Net investment} = \text{CAPEX} - \text{Dep}^n + \Delta \text{WC}}$$

$$\begin{aligned} \text{FCFF} &= \textcircled{\text{I}} - \textcircled{\text{II}} \\ &= \text{NOPAT} - \text{Net investment} \end{aligned}$$

- No Growth

$$\text{Value of firm} = \frac{\text{NOPAT}}{K_c}$$

(\because in case of no growth, net investment will be zero)

- Constant Growth

$$\text{Value of firm} = \frac{\text{FCFF}_1}{K_c - g}$$

- Multiple Growth

[Refer Problem 24 and 39]

Value of equity under FCFE

$$= \frac{\text{FCFE}_1}{1+K_e} + \frac{\text{FCFE}_2}{(1+K_e)^2} + \dots$$

If target debt financing ratio is given -

$$\text{FCFE} = \text{PAT} - \text{NI}(1-w_d)$$

where PAT = profit after tax

NI = Net investment

= CAPEX - Depⁿ + ΔWC

w_d = weight of debt

OR

$$\text{FCFE} = \text{PAT} - \text{NI} \times w_e$$

If target debt financing ratio not given -

$$\text{FCFE} = \text{PAT} - (\text{Net investment} - \text{Net borrowing})$$

↓
Equity investment

and Net borrowing = Total borrowings less Repayments made

Value of Strategy [Refer Problem 46]

$$\text{Value of Strategy} = \text{Post strategy value} - \text{Pre strategy value}$$

- If gross profit margin remains constant then EBIT and NOPAT will increase at the same rate as sales.
- If asset turnover ratio remains constant then Capital employed ($\text{CE} = \text{FA} + \text{CA} - \text{CL}$) will increase at the same rate as sales.

$$\begin{aligned} \text{Net investment} &= \text{Capex} - \text{Dep}^n + \Delta \text{WC} \\ &= \Delta \text{FA} + \Delta \text{CA} - \Delta \text{CL} \\ &= \Delta \text{CE} \end{aligned}$$

• EVA & MVA

$$EVA = NOPAT - \left(\begin{array}{l} WACC \\ \text{or } K_c \end{array} \times \begin{array}{l} \text{Capital employed} \\ \text{or Invested Capital} \end{array} \right)$$

$$MVA = \text{Market value of company} \text{ (Less)} \\ \text{Capital employed as per books}$$

Also $MVA = PV$ of all future EVA's discounted @ K_c

ACCOUNTING BASED VALUATION

i) Net Assets Approach

$$\text{Value of the share} = \frac{\text{Economic value of Assets} - \text{Economic value of Liabilities}}{\text{No. of shares o/s}}$$

ii) Earnings Capitalisation Approach [Refer Problem 26]

$$\text{Value of the business} = \frac{\text{Normal earnings}}{\text{Capitalisation rate}}$$

iii) Yield Capitalisation Approach [Refer Problem 9]

$$\text{Value of share} = \frac{\text{Actual yield}}{\text{Expected yield}} \times \text{Paid up value per share}$$

Exponential Moving Average (EMA)

$$\text{EMA}_t = a(P_t - \text{EMA}_{t-1}) + \text{EMA}_{t-1}$$

$$\text{Where, } a (\text{exponent}) = \frac{2}{n+1}$$

P_t = Price of today

EMA_{t-1} = Previous day EMA

n = no. of days for which average is to be calculated

Runs Test for testing weak form of efficient market hypothesis

Expected number of runs is calculated by using the following formula:

$$M_r = \frac{2n_1n_2}{n_1+n_2} + 1$$

Where, n_1 = number of + symbols

n_2 = number of - symbols

Standard deviation in runs test is calculated by using the following formula:

$$\hat{\sigma}_r = \sqrt{\frac{2n_1n_2(2n_1n_2 - n_1 - n_2)}{(n_1+n_2)^2(n_1+n_2-1)}}$$

lower limit: $M_r - t \times \hat{\sigma}_r$

upper limit: $M_r + t \times \hat{\sigma}_r$

If value of r lies between these limits then the market exhibits weak form of efficiency.

Auto - Correlation Test

[Refer Q.1 (a) of Jan 2021 Paper
or Q.58 of Question Bank]

CA Shubham Agrawal

RECORDED

EXAM ORIENTED BATCH

CA FINAL May 2025 GROUP - 01



AFM

CA SHUBHAM AGRAWAL

~~6999/-~~

Discounted Price

6299/-

Fast Track Batch - Exam Oriented
Brief Conceptual Discussion-
Focus On Problem Solving
6 Months Validity + 1.8x Watchtime
Includes Hard Copy Of Books

For admission/enquiry



Visit us at:

www.letslearnindia.in



Call us at:

+91 8448448919

Bond Analysis

$IV_0 =$ PV of FCF's discounted at R_e
where $R_e =$ yield available on similar bonds

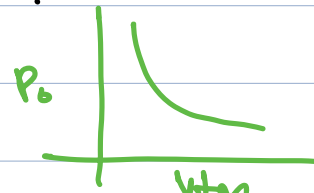
$P_0 =$ PV of FCF's discounted at YTM
of bond

$P_0 = IV_0 \rightarrow$ Bond is correctly priced

$P_0 > IV_0 \rightarrow$ Bond is overpriced and investor
should take short position

$P_0 < IV_0 \rightarrow$ Bond is underpriced and
investor should take long position.

NOTE: There is an inverse relationship b/w
bond price and yield. Bond price vs yield
Curve is convex to the origin.
(y-axis) (x-axis)



• For Conventional Bonds

$$IV_0 = \text{Coupon Amount} \times \text{PVAF}(\bar{r}, n) + \text{Redemption Amount} \times \text{PVIF}(\bar{r}, n)$$

$$y_{tm} = \frac{I + \frac{F-P}{n}}{\frac{F+P}{2}}$$

where I = periodic coupon amount

F = Redemption amount

P = current market price of the bond

n = no. of remaining periods to maturity

$y_{tm} = R_e \Rightarrow$ Bond is correctly priced
($P_0 = IV_0$)

$y_{tm} > R_e \Rightarrow$ Investor should take long position. ($P_0 < IV_0$)

$y_{tm} < R_e \Rightarrow$ Investor should take short position. ($P_0 > IV_0$)

• For Perpetual Bonds

$$IV_0 = \frac{A}{i}$$

$$y_{tm} = \frac{A}{P_0}$$

- For Zero Coupon Bonds

$$\begin{aligned} IV_0 &= \text{Face value} \times \text{PVIF}(r, n) \\ &= \frac{FV}{(1+r)^n} \end{aligned}$$

$$Y_{tm} = \left(\frac{FV}{P_0} \right)^{\frac{1}{n}} - 1$$

- For Unconventional Bonds

$$IV_0 = \frac{C_1}{1+r} + \frac{C_2}{(1+r)^2} + \dots + \frac{C_n}{(1+r)^n}$$

Y_{tm} = internal rate of return (IRR)
at which PV of cash inflows is
equal to PV of cash outflows.

NOTE : $\text{Current yield} = \frac{\text{Coupon Amount}}{\text{Price}} \times 100$

Effective Duration of Bond [Method to find Price volatility if Δy is given]

$$ED = \frac{P_2 - P_1}{2 P_0 \Delta y}$$

Where P_2 = price of bond after decrease in yield.

P_1 = price of bond after increase in yield.

P_0 = current market price of the bond

Δy = interest rate shock in decimals.

NOTE: If yield decreases, price of the bond increases at a faster rate and if yield increases, price of the bond decreases at a lower rate.

Modified Duration [Method to find price volatility if Δy is not given]

$$MD = \frac{D}{\left(1 + \frac{y+m}{n}\right)}$$

where $D = \text{Macaulay's Duration} = \frac{\sum w x}{\sum w}$

$x = \text{Time i.e. } 1, 2, 3, 4, \dots, n$

$w = \text{PV of CF's discounted @ } y_{tm}$

NOTE: i) For ZCB, Macaulay's Duration (D) is equal to maturity (n)

ii) Higher the value of D, more volatile will be bond.

iii)

$$D = \frac{Cy}{y_{tm}} \times \text{PVAF}(y_{tm}, n) \times (1 + y_{tm}) + \left(1 - \frac{Cy}{y_{tm}}\right) \times n$$

iv) % change in price of bond
= Modified Duration \times Change in yield
= MD $\times \Delta y$

v) For bond trading at par, $Cy = y_{tm}$
 $D = \text{PVAF}(y_{tm}, n) \times (1 + y_{tm})$

v) For bond trading at par and with infinite maturity, $D = \frac{1 + ytm}{ytm}$

vii) Lower ytm / coupon bonds are more volatile than higher ytm / coupon bonds.

Convexity (rate of change in duration)

- If interest rate shock not given, then

$$\frac{\sum wx(1+x)}{\sum w(1+x)^2}$$

- If interest rate shock is given, then

$$\text{Where } C^* = \frac{C^* \times (\Delta y)^2 \times 100}{2P_0(\Delta y)^2} = \frac{P_2 + P_1 - 2P_0}{2P_0(\Delta y)^2}$$

Term Structure of Interest Rates

→ Graphical presentation of term structure is known as yield curve.

→ Spot rate (r_{0t}) refers to ytm of ZCBs.

Bootstrap Method

Deriving term structure of interest rates with the help of coupon bearing bonds.

Forward Rate

Interest rate fixed today for borrowing or investing a sum of money at a future date.

$f(3,5) \rightarrow$ 2 year forward at $t = 3$
or

2 year forward after 3 years

$$f(t_1, t_2) = \left[\frac{(1 + r_{0t_2})^{t_2}}{(1 + r_{0t_1})^{t_1}} \right]^{\frac{1}{t_2 - t_1}} - 1$$

e.g

$$f(3,5) = \left[\frac{(1 + r_{05})^5}{(1 + r_{03})^3} \right]^{\frac{1}{2}} - 1$$

Bond Equivalent Yield, Effective Annual yield, Discount yield and Holding Period Yield

Bond Equivalent yield or Nominal Interest Rate

$$= \frac{F - P}{P} \times 100 \times \frac{12}{n} \text{ (months)}$$

(OR)

$$\frac{F - P}{P} \times 100 \times \frac{365}{n} \text{ (days)}$$

Effective Annual yield

$$= \left[1 + \text{Nominal interest rate} \times \frac{n}{12} \right]^{12/n} - 1$$

(OR)

$$\left[1 + \text{Nominal interest rate} \times \frac{n}{365} \right]^{365/n} - 1$$

Discount yield

$$= \frac{F - P}{F} \times 100 \times \frac{12}{n} \text{ (months)}$$

(OR)

$$\frac{F - P}{F} \times 100 \times \frac{365}{n} \text{ (days)}$$

Holding Period Yield

$$\downarrow = \frac{F - P}{P} \times 100$$

CA Shubham Agrawal

CA FINAL AFM

FULL AFM IN 10 DAYS

WHY JOIN US?

- Conceptual Clarity
- Writing Practice of Super Important 250+ Questions
- 2 Full Course Mock Test with Evaluation Sessions
- Coloured Concept Book & Question Bank



Register at:

www.letslearnindia.in | 8448448919

CA Shubham Agrawal



**JUST AT
4750/-**

