

STRATEGIC FINANCIAL MANAGEMENT

For CA Final

FORMULA
for quick revision

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**An exclusive hand written booklet
covering most formulas.**

“Begin your journey from amateur to analyst”



MUTUAL FUNDS

$$1. \text{NAV} = \frac{\text{Market Value of all investments (including cash)} + \text{Receivables} + \text{Accrued Income} - \text{Accrued Expense} - \text{Outside Liabilities}}{\text{Opening units} + \text{units subscribe} - \text{units redeem}}$$

$$+ (\text{Sub units} \times \text{NAV}) - (\text{Redeem units} \times \text{NAV})$$

$$\text{Opening units} + \text{units subscribe} - \text{units redeem}$$

2. Loads :-

$$- \text{Sale Price} = \text{NAV} \times (1 + \text{Entry load \%})$$

$$- \text{Repurchase Price} = \text{NAV} \times (1 - \text{Exit load \%})$$

3. Returns :-

$$- \text{Holding Period Return (HPR)} = \frac{\text{NAV}_e - \text{NAV}_b + D + C_g}{\text{NAV}_b} \times 100$$

where; D = Income received during the investment period

(in form of dividend or interest)

C_g = It is the gains received by trading the shares.

- Simple Annualised Return (SAR) = $\text{HPR} \times \frac{12}{n}$

- Compound Annualised Gross Return (CAGR)
 $\text{PV} \times (1+r)^t = \text{FV}$

4. Close Ended Funds

% Discount / Premium Price = $\frac{\text{Exchange price} - \text{NAV}}{\text{NAV}} \times 100$

5. Expense Ratio = $\frac{\text{Expenses}}{\text{Average Portfolio} / \text{Average NAV}}$

6. Returns = $\frac{\text{Ending Value} - \text{Beginning Value}}{\text{Beginning Value}} \times 100$

PORTFOLIO MANAGEMENT

D) STATISTICS

1. Returns = $\frac{(P_1 - P_0) + I}{P_0} \times 100$

where; P_0 = Price at the beginning of investment period

P_1 = Price at the end of investment period

I = Income earned during investment period

2. Average Return (Mean)

Past data
without probability
 $\bar{x} = \frac{\sum x}{N}$

Future Data
Probability
 $\bar{x} = \sum (x \times P)$

3. Average Risk
(Standard Deviation)

$\sigma_x = \sqrt{\frac{\sum (x - \bar{x})^2}{N}}$

$\sigma_x = \sqrt{\sum [(x - \bar{x})^2 \times P]}$

4. Covariance (Cov_{xy})

$\frac{\sum [(x - \bar{x})(y - \bar{y})]}{N}$

$\sum [(x - \bar{x})(y - \bar{y}) \times P]$

5. Covariation (r_{xy}) = $\frac{\text{Cov}_{xy}}{\sigma_x \times \sigma_y}$

$\therefore \text{Cov}_{xy} = r_{xy} \times \sigma_x \times \sigma_y$

6. Portfolio Return (R_p) = $w_a x a + w_b x b + \dots \dots \dots w_n x n$

{ Combination of variance calculation = $\frac{n(n-1)}{2}$ }

7. Portfolio Risk (σ_p) = $\sqrt{w_a^2 x \sigma_a^2 + w_b^2 x \sigma_b^2 + 2w_a w_b \cdot \underset{\substack{\downarrow \\ x a b x \sigma a x \sigma b}}{Covab}}$

8. Properties of Portfolio Risk

When $x = -1$; $\sigma_p = a - b$

$x = +1$; $\sigma_p = a + b$

$x = 0$; $\sigma_p = \sqrt{a^2 + b^2}$

9. Minimum Variance Portfolio (MVP)

$$w_a = \frac{\sigma_b^2 - Covab}{\sigma_a^2 + \sigma_b^2 - 2Covab}$$

- When $x = -1$; $\sigma_p = 0 \rightarrow +ve$ weights

- When $x = +1$; $\sigma_p = 0 \rightarrow -ve$ weights (Short selling)

10. Theory of Dominance

Rule 1: Same Return :- Risk \downarrow

Rule 2: Same Risk :- Return \uparrow

Rule 3: Different Return and Risk :- Coefficient of variation = $\frac{\sigma}{x}$
 { lower, the better }

• Different ways of calculating Expected Return:-

11. As per Capital Asset Pricing Model (CAPM);

$$k_e / RRR / E(x) = R_f + (R_m - R_f) \times \beta$$

where; $E(x)$ = Expected return by investors.

RRR = Required rate of return by equity shareholders.

k_e = Cost of equity to the company.

R_f = Risk free rate of return for the investor.

R_m = Return on market portfolio.

$R_m - R_f$ = Market Risk Premium

β = Beta

12. As per Security Characteristic Line (SCL) / Sharpe Index Model / Single Index Model;

$$E(x) = R_f + R_m \times \beta$$

13. As per Arbitrage Pricing Theory (APT) / Multifactor Model;

$$E(x) = R_f + \beta_1 \times R_{p1} + \beta_2 \times R_{p2} + \dots \dots \dots \beta_n \times R_{pn}$$

where; β = Sensitivity of factors on stock (1, 2, 3, n)

R_p = Risk Premium i.e. Actual returns - Expected Returns

$$\& R_p = A_x - E(x)$$

14. As per Capital Market Line (CML) / No Beta

$$E(x) = R_f + \left(\frac{R_m - R_f}{\sigma_m} \right) \times \sigma_L$$

where; σ_L = Risk of stock / Portfolio

σ_m = Total Market Risk

$\frac{R_m - R_f}{\sigma_m}$ = Sharpe Ratio of Market / Risk Return trade off / Slope of CML

• Ways of Calculating Portfolio Risk:-

15. Markowitz Model : $\sigma_p = \sqrt{w_a^2 \sigma_a^2 + w_b^2 \sigma_b^2 + 2w_a w_b \text{Cov}_{ab}}$

16. Sharpe Model : $\sigma_p^2 = \text{Systematic Risk} + \text{Unsystematic Risk}$
 $= \rho_p^2 \sigma_m^2 + [\sigma_e^2 w_a^2 + \sigma_e b^2 w_b^2 + \dots]$

where; $e = \text{Standard Error / Residual Error /}$
 Unsystematic Risk

• Beta Calculation:-

17. Beta (β) = $\frac{\text{Cov}_{im}}{\sigma_m^2}$

OR

$$\beta = \frac{\sum i m \times e_i \times e_m}{\sigma_m^2} = \frac{\sum i m \times e_i}{e_m}$$

where; $i = \text{Stock}$

$m = \text{market}$

18. Portfolio Beta (β_p) = $\rho_a \times w_a + \rho_b \times w_b + \rho_c \times w_c + \dots + \rho_n \times w_n$

• Systematic & Unsystematic Risk - for Individual Security & Portfolio

19. Individual Security

$$SR = \beta_i^2 \times \sigma_m^2$$

$$USR = \sigma_{ei}^2$$

20. Portfolio

$$SR = \beta_p^2 \times \sigma_m^2$$

$$USR = w_a^2 \times \sigma_{ea}^2 + w_b^2 \times \sigma_{eb}^2 + w_c^2 \times \sigma_{ec}^2 + \dots$$

21. Covariance between 2 Securities using Beta

$$\text{Covab} = \beta_a \times \beta_b \times \sigma_m^2$$

II) PERFORMANCE EVALUATION

1. Sharpe Ratio = $\frac{R_p - R_f}{\sigma_p}$

where; R_p = Return of portfolio/fund/security

R_f = Risk free return

σ_p = Standard Deviation.

2. Treynor Ratio = $\frac{R_p - R_f}{\beta_p}$

where; β_p = Systematic Risk of Portfolio.

3. Jensen's Alfa (α) = $A(\alpha) - E(\alpha)$

where; $E(\alpha) = R_f + (R_m - R_f) \times \beta$ {As per CAPM}

III) PRICING

$$P_0 = \frac{D_0(1+g)}{R_e - g}$$

$$\text{or } P_0 = \frac{D_1}{R_e - g}$$

where; P_0 = Intrinsic Value/Equilibrium Price/Ideal Price

D_0 = Current dividend/last yrs dividend/Dividend paid/Already given

D_1 = Expected dividend/Dividend in future/Dividend to be paid in next year

g = Growth in dividends/earnings/cashflows

{ g = retention ratio (b) \times return on equity (ROE) }

R_e = Cost of equity; Expected return by ESH; Equity Capitalisation Rate

{As per CAPM; $R_e = R_f + (R_m - R_f) \times \beta$ }

SECURITY ANALYSIS

1. Single Stage Growth Model

As per Gordon's Growth; $P_0 = \frac{D_0(1+g)}{k_e - g}$ or $P_0 = \frac{D_1}{k_e - g}$

where; P_0 = Intrinsic Value / Equilibrium Price / Ideal Price

D_0 = Current dividend / Last year dividend / Dividend paid / Already given

D_1 = Expected dividend / Dividend in future / Dividend to be paid in next year.

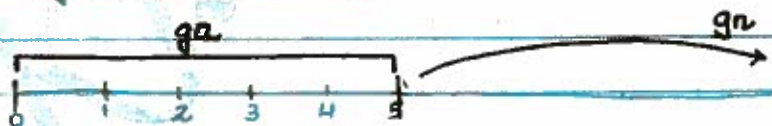
g = Growth in dividends / earnings / cash flows:

$\{g = \text{retention ratio (b)} \times \text{return on equity (ROE)}\}$

k_e = Cost of equity; Expected return by E&T; Equity Capitalisation Rate

$\{ \text{As per CAPM; } k_e = R_f + (R_m - R_f) \times \beta \}$

2. Dual Stage Growth Model



$$P_0 = \sum \frac{D_0(1+g_a)^t}{(1+k_e)^t} + \frac{D_t(1+g_n)}{(k_e - g_n)(1+k_e)^t}$$

where; t = terminal year

g_a = abnormal growth rate

g_n = normal growth rate.

k_e = Cost of equity.

3. Free Cash flow to the firm (FCFF)

Given:

$$i) \text{ Net Income } FCFF = \text{Net Income} + \text{Non Cash} + \text{Interest} (1-T) - \text{FC invst} - \Delta WC \text{ investment}$$

$$ii) \text{ Net Capex } FCFF = \text{Net Income} + \text{Interest} (1-T) - [\text{FC invst} - \text{Dep}^n] - \Delta WC \text{ invst}$$

Net Capex

$$iii) \text{ Non Operating Income } FCFF = \text{EBIT} (1-T) - [\text{FC invst} - \text{Dep}^n] - \Delta WC \text{ invst}$$

$$iv) \text{ Operating Cash Flow } FCFF = \text{CFO} + \text{Int} (1-T) - \text{FC invst}$$

$$* (EBIT - I) \times (1-T) = NI$$

$$EBIT (1-T) - I (1-T) = NI$$

$$\therefore EBIT (1-T) = NI + I (1-T)$$

$$** CFO = NI + \text{Non Cash} - \Delta WC \text{ invst}$$

4. Free Cash Flow to the Equity (FCFE)

$$i) FCFE = FCFF - \text{Int} (1-T) + NB (\text{Net Borrowings})$$

$$ii) FCFE = NI - [\text{FC invst} - \text{Dep}^n] - \Delta WC \text{ invst} + NB$$

$$iii) FCFE = NI - [\text{FC invst} - \text{Dep}^n] - \Delta WC \text{ invst} + D \times [\text{FC invst} - \text{Dep}^n] + D \times \Delta WC \text{ invst}$$

$$iv) FCFE = NI - [(1-D) (\text{FC invst} - \text{Dep}^n)] - [(1-D) \times \Delta WC \text{ invst}]$$

$$v) FCFE = NI - [E \times (\text{FC invst} - \text{Dep}^n)] - [E \times \Delta WC \text{ invst}]$$

5. Valuation of firm (FCFE)

- Single Stage :-
$$V_{\text{firm}} = \frac{\text{FCFE} \times (1+g)}{\text{WACC} - g}$$

- Multi Stage :-
$$V_{\text{firm}} = \sum \frac{\text{FCFE}_t (1+g)^t}{(1+\text{WACC})^t} + \frac{\text{FCFE}_T \times (1+g_T)}{(\text{WACC} - g_T) (1+\text{WACC})^T}$$

where; $\text{WACC} = k_D = w_D \times k_D + w_P \times k_P + w_E \times k_E$

$g = \text{retention ratio (b)} \times \text{Return on Capital Employed (ROCE)}$

- $V_{\text{firm}} = V_d + V_p + V_e - \text{Cash}$

$\therefore V_e = V_{\text{firm}} - V_d - V_p + \text{Cash}$

- $P_0 = \frac{V_e}{\text{No of shares}}$

6. Valuation of Equity (FCFE)

- Single stage :-
$$V_e = \frac{\text{FCFE} \times (1+g)}{k_E - g}$$

- Multi Stage :-
$$V_e = \sum \frac{\text{FCFE}_t \times (1+g)^t}{(1+k_E)^t} + \frac{\text{FCFE}_T \times (1+g_T)}{(k_E - g_T) (1+k_E)^T}$$

where; $k_E = \text{Cost of equity}$

- $P_0 = \frac{V_e}{\text{No of shares}}$

7. Economic Value Added (EVA)

- $$\text{EVA} = \text{Net Operating Profit after tax} - \left[\frac{\text{Total invested capital}}{\text{(TIC)}} \times \text{WACC} \right]$$
- $$\text{EVA} = [\text{EBIT}(1-T)] - [(D+E) \times \text{WACC}\%]$$

where; TIC = Debt + Equity / EC invt + WC invt

8. Convertible Preference Shares

- i) Conversion Ratio = No of equity shares : Preference shares.
- ii) Conversion Value = Conversion Ratio \times CMP of equity.
- iii) Conversion Premium = $\frac{\text{Market Price of Pref sh} - \text{Conversion Value}}{\text{Conversion Value}} \times 100$

9. Right Issue & Valuation of Rights

- i) Value of Right =
$$\frac{P_0 - (N_r \times x)}{N_e + N_r}$$
- ii) X-Right Price =
$$\frac{(P_0 \times N_e) + (N_r \times x)}{N_e + N_r}$$

where; P_0 = Current price of equity share.

N_e = No of equity shares

x = Right Price

N_r = No of rights.

- iii) Cur Right Price - Value of Right = X-Right Price.

SECURITY ANALYSIS - BOND VALUATION

1. Intrinsic Value of the bond (P_0) = $C \times PVIFA(x\%, t) + RV \times PVIF(x\%, t)$

where; C = Coupon.

PVIFA = Present Value Interest Factor Annually

x = Yield to Maturity (YTM)

t = time/period

PVIF = Present Value Interest Factor

RV = Redemption Value

2. Approximate YTM (Non-Time Value) =
$$\frac{\text{Interest} + \left[\frac{RV - CMP}{t} \right]}{\frac{RV + CMP}{2}} \times 100$$

where; CMP = Current Market Price.

3. Perpetual / Redeemable Bond

$$P_0 = \frac{\text{Coupon}}{\text{YTM}}$$

4. Current Yield = $\frac{\text{Coupon}}{\text{Price}} \times 100$

5. Duration = $t \times wt$

where; t = time/period.

wt = weights

$$6. \text{Modified Duration} = \frac{\text{Duration}}{(MD)} \times \frac{1}{1 + YTM}$$

$$7. -MD = \frac{\% \Delta \text{ Price}}{\% \Delta \text{ Yield}}$$

$$\therefore \% \Delta \text{ in Price} = \% \Delta \text{ Yield} \times -MD$$

$$8. D = \frac{C \times t}{(1+y)^t} + \frac{RV \times t}{(1+y)^t}$$

P_0

where; D = Duration

y = YTM

$$9. \text{Straight Value} \times P_0 = C \times PVIF(Y\%, t) + RV \times PVIF(Y\%, t)$$

$$10. \text{Option Value} = \text{Current Market Price of bond} - \text{Straight Value}$$

$$11. \text{Downside Risk} = \text{Option Value}$$

$$12. \% \text{ of Downside Risk} = \frac{\text{Straight Value} - \text{CMP}}{\text{CMP}} \times 100$$

$$13. \text{Conversion Ratio} = \text{no of shares receivable on conversion of 1 convertible bond}$$

$$14. \text{Stock Value / Conversion Value} = \text{Conversion Ratio} \times \text{CMP of stock/equity}$$

$$15. \text{Conversion Parity Price} = \frac{\text{CMP of bond}}{\text{Conversion Ratio}}$$

$$16. \text{Conversion Premium} = \text{Conversion Parity Price} - \text{CMP of Equity}$$

$$17. \text{Conversion Premium \%} = \frac{\text{Conversion Premium}}{\text{CMP of Equity}} \times 100$$

$$18. \text{Favourable Income Difference / share} = \frac{\text{Coupon} - [\text{Exchange ratio} \times \text{DPS}]}{\text{Exchange ratio}}$$

where; DPS = Dividend per share.

$$19. \text{Premium Payback Period} = \frac{\text{Conversion Premium}}{\text{Favourable Income Diff / share}}$$

$$20. \text{Duration of Perpetual Bond} = \frac{1 + C\%}{YTM}$$

MERGER, ACQUISITION & CORPORATE RESTRUCTURING

$$1. \text{ Exchange Ratio} = \frac{\text{EPS/MPS/BVPS}_T}{\text{EPS/MPS/BVPS}_A}$$

where; EPS = Earning per share

MPS = Market Price per share

BVPS = Book Value per share

T = Target Company

A = Acquiring Company

$$2. \text{ Promoters holding after acquisition} = \text{sh in acq co} + (\text{ER} \times \text{sh in target co})$$

$$3. \% \text{ Promoters Holding} = \frac{\text{Promoters shares}}{\text{Total number of shares}} \times 100$$

$$4. \text{ Free float market capitalisation} = (\text{Total shares} - \text{Promoters sh}) \times \text{MPS}$$

OR

$$= \text{Mkt Cap} \times \text{Public Holding}$$

$$5. \text{ MPS} = \text{EPS} \times \text{PE}$$

where; PE = Price earning Ratio

$$6. \text{ Post merger (Mkt Cap)} = \text{No of shares} \times \text{MPS}$$

$$7. \text{ Market Capitalisation} = \frac{\text{Free float market cap}}{\text{Free float } (\%)}$$

8. Net NPA = Gross NPA - Provisions

9. Gross NPA (%) = $\frac{\text{Gross NPA}}{\text{Total Advances}} \times 100$

10. Capital Adequacy Ratio (CAR) = $\frac{\text{Total Capital}}{\text{Risk Weighted Assets}} \times 100$

11. Swap Ratio = $\left(\frac{BVPS_T}{BVPS_A} \times w \right) + \left(\frac{MPS_T}{MPS_A} \times w \right) + \left(\frac{CAR_T}{CAR_A} \times w \right) + \left(\frac{GNPRA}{GNPRA_T} \times w \right)$

where; BVPS = Book Value per share

MPS = Market Price per share

CAR = Capital Adequacy Ratio

GNPRA = Gross Non Performing Asset

w = Weights

12. ρ_{asset} = $w_d \times \rho_d + w_e \times \rho_e$

where; d = debt

e = equity

13. Asset β with no taxation

$$\rho_{asset} = \frac{D}{D+E} \times \rho_d + \frac{E}{D+E} \times \rho_e$$

{If nothing given $\rightarrow \rho_d = 0$ }

14. Asset β with taxation

$$\rho_{asset} = \frac{D/(1-t)}{D/(1-t) + E} \times \rho_d + \frac{E}{D/(1-t) + E} \times \rho_e$$

15. $\beta_d = 0$ {Not Given}
 $\therefore \beta_{asset} = w_e \times \beta_e$

16. If only equity is issued.
 $\beta_{asset} = \beta_e$

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FOREIGN EXCHANGE & DERIVATIVES

1. $\text{Spread} = \text{Ask rate} - \text{Bid rate}$

2. $\text{Mid-Quote} = \frac{\text{Ask rate} + \text{Bid rate}}{2}$

3. $\text{Spread Margin (\%)} = \frac{\text{Spread}}{\text{Mid-Quote}} \times 100$

4. $\text{Bid rate} = \text{Mid-Quote} - \frac{\text{Spread}}{2}$

5. $\text{Ask rate} = \text{Mid-Quote} + \frac{\text{Spread}}{2}$

6. Annualised Forward Margin (AFM)

$$\text{AFM} = \frac{F - S}{S} \times 100 \times \frac{12}{N}$$

where ; F = Forward rate

S = Spot rate

N = No of months.

7. No par Interest Rate Parity (IRP);

$$\text{Forward Rate}_{bc} = \text{Spot}_{bc} \times \frac{(1 + \text{Int}_{vc})}{(1 + \text{Int}_{bc})}$$

where ; bc = base currency

vc = variable currency.

8. Law of One Price.

$$P_{HC} = P_{FC} \times FC$$

where; P_{HC} = Price of goods in home currency.

P_{FC} = Price of goods in foreign currency.

FC = Exchange rate in foreign currency.

9. As per Purchasing Power Parity (PPP);

$$\text{Forward Rate} = \text{Spot rate} \times \frac{(1 + \text{Inflation}_v)}{(1 + \text{Inflation}_b)}$$

where; v = variable currency.

b = base currency.

10. As per Fisher's Effect;

$$(1 + N) = (1 + R) \times (1 + I)$$

where; N = Nominal Interest Rate.

R = Real Interest Rate.

I = Inflation.

11. Theoretical / Ideal / Equilibrium Future Price (TFP);

$$TFP = S + C - D$$

where; S = Spot Price

C = Cost of carrying

D = Dividend

12. Cost of Carrying - Simple Annualised

- Dividend (Absolute)

$$TFP = S + \left(S \times r \times \frac{t}{12} \right) - D$$

- Dividend Yield

$$TFP = S + \left(S \times r \times \frac{t}{12} \right) - \left(S \times d \times \frac{t}{12} \right)$$

$$\therefore TFP = S + \left[S \times (r - d) \times \frac{t}{12} \right]$$

13. Cost of Carrying - Compounded Annualised.- Dividend (Absolute)

$$TFP = S \times (1 + r)^t - D$$

- Dividend Yield

$$TFP = S \times [1 + (r - d)]^t$$

14. Effective Rate of Interest

$$EROI = \left[1 + \frac{r}{n} \right]^{t \times n} - 1$$

where; t = No of year (time period) of compounding.
 n = No of times compounding in a year.

15. CCRI / Exponential

$$FV = PV \times (1 + r)^t$$

$$PV = PV \times e^{rt}$$

where; r = rate of interest

t = time to maturity

e^{rt} = e^{rt} is the exponential function which is always in factor and will be provided in the question.

16. Cost of carrying - CCR- Dividend (Absolute)

- If dividend is expected at end

$$TFP = S \times e^{rt} - D$$

- If dividend is received between / before maturity

Method 1 : $TFP = S \times e^{rt_1} - D \times e^{rt_2}$

Method 2 : $TFP = (S - D \times e^{-rt_1}) \times e^{rt_2}$

- Dividend Yield

$$TFP = S \times e^{(r-d) \times t}$$

17. $TFP = [S + C] + S_c / L$

where; S_c / L = Storage Cost.

18. $\text{Contract Size} = \underbrace{(\beta_T - \beta_P)}_{\text{Risk Adjustment}} \times \underbrace{\frac{VP}{FCS}}_{\text{Quantity Adjustment}}$

Risk Adjustment

Quantity Adjustment

where; β_T = Target Beta

β_P = Portfolio Beta

VP = Value of Portfolio

FCS = Future Contract Size.

19. Margin Call = Initial Margin - Balance in Margin Account

20. $BEP = \frac{\text{Initial Margin} - \text{Maintenance Margin}}{\text{lot size}}$

21. Opening balance - (M2M loss) + Margin Call = Closing balance.

22. Contract Size (Hedging Portfolio with Options / Delta Hedging)

$$CS = \frac{1}{\Delta} \times \frac{VP}{OCS}$$

where; CS = Contract Size

VP = Value of Portfolio.

OCS = Option Contract Size.

Δ = Delta = $\frac{\% \text{ change in Option Premium}}{\% \text{ change in Underlying Asset}}$

$$23. \text{FRA Pay Off} = \frac{(\text{Ref rate} - \text{FRA rate}) \times NP \times \frac{d}{360}}{\left[1 + \left(\text{FRA} \times \frac{d}{360}\right)\right]}$$

where; FRA rate / RFRA = It is fixed rate of FRA (i.e. Contracted Rate)

Ref rate = Settlement rate or LIBOR on maturity.

d = Duration of the underlying.

NP = Notional Principal

24. As per Risk Neutral Model (ANM);

$$(S_u \times P_u) + (S_d \times P_d) = TFP$$

where; S_u = Price when the stock goes upwards

S_d = Price when the stock goes downwards.

P_u = Probability of stock going upwards.

P_d = Probability of stock going downwards.

S_0 = Price of stock today.

r = Risk free rate

t = Time of maturity

$$P_u + P_d = 1$$

25. Put Call Parity.

$$S_0 + P_0 = C_0 + Xe^{-rt}$$

where; S_0 = Long in Stock.

P_0 = Long Put

C_0 = Long Call.

Xe^{-rt} = Present value of the strike price also called as Investment in risk free at present value of X .

26. Formulas of Black & Scholes.

$$C_0 = S_0 \times N(d_1) - Xe^{-rt} \times N(d_2)$$

$$d_1 = \frac{\ln\left(\frac{S}{X}\right) + \left[\left(r + \frac{\sigma^2}{2}\right) \times t\right]}{\sigma \sqrt{t}}$$

$$d_2 = d_1 - \sigma \sqrt{t}$$

where; C_0 = Price of Call / Call Premium today.

S_0 = Spot Price today.

X = Strike Price.

Xe^{-rt} = Present Value of strike.

r = Risk free rate (Annualised)

σ = Standard deviation (Annualised)

t = Time to maturity

\ln = log Natural

$N(d_1)$ = It is the probability of spot at maturity i.e. S_t .

$N(d_2)$ = It is the probability of exercising the Option at X .

D) INTERNATIONAL FINANCIAL MANAGEMENT

1. As per Interest Rate Parity;

$$\text{Forward}_{bc} = \text{Spot}_{bc} \times \frac{(1 + \text{Int}_{vc})}{(1 + \text{Int}_{bc})}$$

where; bc = base currency

vc = variable currency

2. As per Purchasing Power Parity;

$$\text{Forward}_{bc} = \text{Spot}_{bc} \times \frac{(1 + \text{Inflation}_{vc})}{(1 + \text{Inflation}_{bc})}$$

3. $\text{NCF} = \text{RCF} \times (1 + \text{Inflation})$

4. $\text{RCF} = \frac{\text{NCF}}{(1 + \text{Inflation})}$

5. Modified Internal Rate of Return = $\left[\frac{\text{FV}}{\text{PV}} \right]^{1/t} - 1$
(MIRR)

CA FINAL

PAPER – 6B:
FINANCIAL
SERVICES
& CAPITAL
MARKETS



KUNAL DOSHI, CFA

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MONEY MARKET

$$1. \text{Discount Yield} = \frac{FV - \text{Price}}{FV} \times 100 \times \frac{365}{t}$$

where; FV = Face Value

t = Period / time

$$2. \text{Bond Equivalent Yield} = \frac{FV - \text{Price}}{\text{Price}} \times 100 \times \frac{365}{t}$$

$$3. \text{Effective Annualised Yield} = \left[1 + \frac{r}{n} \right]^{tn} - 1$$

where; n = no. of times compounded in a Year

t = Period / time

CAPITAL BUDGETING DECISION

A) BASICS

1. Cash flow after tax = Net profit after tax + Depreciation.

2. Payback Period = $E + \frac{B}{C}$

where; E = Preceding years to the year of recovery of initial investment.

B = Balance amount to be recovered

C = Total cash flow in the year of recovery.

3. Net Present Value (NPV) = Present Value of Cash Inflows - Present Value of Cash Outflows.

4. Profitability Index (PI) = $\frac{\text{Present Value of Cash Inflows}}{\text{Present Value of Cash Outflows}}$

5. Annualised NPV / Equivalent Annualised Cost (EAC)
= $\frac{\text{NPV} / \text{PV of Net Cash Outflows}}{\text{PVIFA}(\alpha\%, t)}$

where; PVIFA = Present Value Interest Factor Annuity

α = Rate of Interest

t = Time / Period.

7. Average Rate of Return (ARR)

$$ARR = \frac{\text{Average NPAT}}{\text{Average Investment}} \times 100$$

where; $\text{Average Investments} = \frac{\text{Opening} + \text{Closing invt}}{2}$

OR can be taken as closing invt.

8. Inflation in Capital Budgeting.

As per Fisher Effect; $\text{Nominal Rate} = \text{Inflation} + \text{Real Rate}$

$$\therefore (1+N) = (1+\text{Inflation}) \times (1+R)$$

$$9. RCF \times (1 + \text{Inflation}) = NCF$$

where; RCF = Real Cash Flow

NCF = Nominal Cash Flow.

$$10. NCF \times \frac{1}{(1+\text{Inflation})} = RCF$$

B) RISK ANALYSIS.

$$1. \text{Coefficient of Variation} = \frac{\text{Risk}}{\text{Return}} = \frac{\sigma}{\bar{x}}$$

(Risk-Reward Ratio)

Particulars	without probability	with Probability
2. \bar{x} (Return)	$\frac{\sum x}{N}$	$\sum (x \times P)$

3. σ (Risk)	$\sqrt{\frac{\sum (x - \bar{x})^2}{N}}$	$\sqrt{\sum [(x - \bar{x})^2 \times P]}$
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4. Calculation of Risk of the Project -i) If cash flows are dependent

$\{x=1; \sigma_p = a+b\}$

$$\sigma_{NPV} = (\sigma_{CF_1} \times DF_1) + (\sigma_{CF_2} \times DF_2) + (\sigma_{CF_3} \times DF_3)$$

ii) If cash flows are Independent

$\{x=0; \sigma_p = \sqrt{a^2 + b^2}\}$

$$\sigma_{NPV} = \sqrt{(\sigma_{CF_1} \times DF_1)^2 + (\sigma_{CF_2} \times DF_2)^2 + (\sigma_{CF_3} \times DF_3)^2}$$

5. Standard Normal Distribution Curve

$$Z \text{ value} = \frac{\text{Target Value} - \bar{X}}{\sigma_Z}$$

c) LEASING & BORROWING DECISION1. Calculation of Lease Rental (Break Even Lease)

$$PVCO = \text{Lease Rental} \times (1-t) \times PVIFA(x\%, t)$$

where; x = required return by the lessor / COC of lessor.2. Calculation of EAI - Equated Annual Installmenti) If installments are on end of year

$$\text{loan amount} = \text{EAI} \times PVIFA(\text{Int}\%, t)$$

ii) If installments are on beginning of year

$$\text{loan amount} = \text{EAI} \times [1 + PVIFA(\text{Int}\%, t-1)]$$

FACTORING

$$1. \text{ Debtors T/O Ratio} = \frac{\text{Credit Sales}}{\text{Average Debtors / Accounts Receivable.}}$$

$$2. \frac{\text{Debtors Velocity Ratio / Average Collection Period}}{\text{Debtors Turnover Ratio}} = \frac{12}{\text{Debtors Turnover Ratio}}$$

$$\text{OR}$$

$$= \frac{12}{\text{Credit Sales}} \times \text{Avg. Debtors}$$

$$3. \text{ Average Debtors} = \frac{\text{Credit Sales} \times \text{Average Collection Period}}{12}$$

$$4. \text{ Credit Sales} = \frac{\text{Receivables} \times 12}{12}$$

$$5. \text{ Effective rate of factoring} = \frac{\text{Net annualised cost of factoring}}{\text{Actual advance granted}} \times 100$$

DIVIDEND POLICY

* DIVIDEND APPROACHES

1. Walter's Model

$$P = \frac{D + (E-D) \times \frac{x}{k_e}}{k_e}$$

where; P = Price of share / Intrinsic Value

D = Dividends (DPS)

E = Earnings (EPS)

x = Return on investment / Return on Equity or return on retained earnings; IRR

(Kitna kamaya / Kitna kama sakte hain)

k_e = Cost of equity / Required return by equity shareholders / Equity Capitalisation rate.

(Kitna kamana chahiye)

$$[k_e = 1 \div \text{PE ratio}]$$

2. Gordon's Growth

$$P_0 = \frac{D_1}{k_e - g} \quad \text{or} \quad \frac{D_0 \times (1+g)}{k_e - g}$$

where; P_0 = Intrinsic Value / Equilibrium Price / Ideal Price

D_0 = Current dividend / Last yrs dividend / Dividend paid / Already given

D_1 = Expected dividend / dividend in future / Div to be paid in next year

g = Growth $\{ g = b \times ROE \text{ i.e. retention ratio} \times \text{return on equity} \}$

k_e = Cost of equity $\{ \text{As per CAPM; } k_e = R_f + (R_m - R_f) \times \beta \}$

3. Graham & Dodd Model (Traditional Model)

$$\text{Price} = \left[\frac{D + E}{3} \right] \times M$$

where; M = Multiplier

4. Lintner's Model

$$D_1 = D_0 \times c + [(\text{Target P/E ratio} \times \text{EPS}) \times (1 - c)]$$

where; D_0 = Current dividend or last year dividend

D_1 = Expected dividend or next year dividend.

c = Adjustment factors / weights.

EPS = Earnings per share

5. Modigliani & Miller

$$P_0 = \frac{D_1 + P_1}{(1 + k_e)}$$

where; P_0 = Current Price

P_1 = Expected Price

D_1 = Expected Dividend

k_e = Cost of equity

* DIVIDEND IRRELEVANCE THEORY OF MM

$$nP_0 = \frac{P(m+n) - I + E}{1 + k_e}$$

where; nP_0 = Total market value of firm

P = Price of share / Intrinsic Value

m = Old shares

n = new shares

I = Investment made

E = Total Earnings

k_e = Cost of equity

* THEORETICAL BUY-BACK PRICE

Value of co before Buy-back = Value of co after buy-back

$$(x \times P_0) = (x - b) \times P_1$$

$$\therefore P_1 = \frac{x \times P_0}{(x - b)}$$

where; x = No of shares before buy-back

b = Buy-back shares

P_0 = Price of co before buy-back

P_1 = Price of co after buy-back / Buy-back price

TESTIMONIALS

"It was a journey. From movie rating to CRISIL rating. From Zomato reviews to Stock Analysts reports. From discussing Cricket to discussing Bitcoins. The various concepts linked with practical scenarios helped me not only to grasp syllabus related things easily but also helped me to understand and analyse various practical things. Yes, academically Kunal Sir's teachings has helped me drastically. Not only in CA Final but also in CS Professional I was able to touch the 70 line. But as it is rightly said that education is what remains when what has been learned has been forgotten, every concept learned with him is still fresh in my mind. It was a great journey from being an AMATEUR to an ANALYST! Now, not only I am able to add CA prefix to my name but also able to understand things in a broad spectrum. Things such as Brexit, SAARC relations, Investment Models, Currency devaluation, Cut motions, Subprime Crisis and many other things which earlier were like Chinese for me. Lots of thanks to Kunal Sir. A teacher who not just taught how to solve sums but who instilled a love for learning."

Pratik Chowkekar

I was always scared of SFM and never thought I would score 81 in SFM. All thanks to Kunal Sir, the best SFM professor. His global financial and political knowledge is very good. He will teach the more important thing in SFM paper that is how to read the question and evaluate the answer. Thank you so much sir.

Alina Lopes

Attempted 80 marks SFM paper and scored 69. I have done Kunal sir's fast track course for SFM. And since then SFM became my favourite subject. His teaching is totally different. I mean, he doesn't just stick to the syllabus. Learning from him is like you are virtually entering into the market and dealing everything there. He doesn't just make your concepts clear but he also makes sure that you become proficient in its practical aspect too. That is one of the reason, why I learnt SFM from him. The finance subject becomes so easy that you can explain it to anyone. Most important, I attempted the paper of 80 marks and I scored 69. The subject helped me to save my group and also to earn the CA prefix!

Anagha Patil

Best professor ever! Kunal sir makes the complicated concept so easy that you can solve any problem easily. He focuses on the basics and that's the best part. I scored 76 marks in SFM just because of him. My true idol Thanks a lot Kunal Sir..!!

Preksha Patel

Kunal sir's explanation of concepts was amazing and made SFM a cakewalk. I was a person who knew nothing and after attending sir's 1 month batch there was a drastic change as I could completely connect the subject to the practical world. Hence proved that the punch-line "from amateur to analyst" holds true. Thanks a lot sir as scoring 72 made me achieve my dream of CA. In short, by joining Kunal Sir's class there's an assured guarantee that one's future is in safe hands.

Alina Lopes

Kunal sir's SFM class makes you fall in love with the subject. I have attended his pendrive classes. He explains even the complicated topics in simple and clear manner. His examples and ability to connect the topics to current market scenarios makes the class interesting. He also teaches how to analysis and understand the questions. Special care is taken with regard to presentation of answers and to improve speed. After attending the classes you become confident to face the exams. Thank you sir for helping me score 73 in SFM.

Christeena Sebastian

By any chance you happened to be a math phobic or person who dislikes numbers, then Kunal Sir is the right person to go to for SFM. I repose great trust in the teaching skills of Kunal Sir, solely because he knows his subject in enough depths to make students understand it easily. I was a CS student, however, studied SFM with CA students and I passed this subject in one go. Be sincere in your efforts and Sir is ready to help you pass with flying colours.

Niyati Panchal

Thanks for making this subject so much fun and easy. I scored 72 in SFM and had attended a fast track course. Awesome conceptual clarity with best study material ever!

Smruti Shah

Kunal Sir's method of teaching is brilliant, he teaches the most complicated concepts in the simplest way possible. He continuously links current affairs with SFM which makes studying and understanding the subject even more interesting. His focus is to make sure that all his students think like analysts which ultimately helps scoring an exemption in SFM believable. Kunal sir's teaching is highly recommended to every student aiming an exemption and best understanding of the subject

Yuti Mehta Sanghvi

Lots of Thanks to Kunal Sir, Despite May18 SFM being tricky paper, I managed to clear my CA with very good marks in SFM. All the topics of SFM are superbly taught by giving in depth knowledge of the subject linking it with practical examples of share markets, various economic policies etc. which made flow of learning very practical & making SFM concepts very strong. Kunal sir is really a good motivator and equal attention is given to each & every student. He encourages involvement and participation of every student to make SFM topics lively and easy to remember

Kevin Lodaya

Special thanks to Kunal Doshi sir got exemption in SFM by just revising once for 3 days. He is the best teacher for SFM. His approach towards giving practical knowledge of stock markets, proving you the formula with their derivation makes it easy to understand and remember the concepts. He proves the tag line of becoming amateur to analyst!

Smita Shah

Kunal Doshi Sir is the one you should go to if you not only want to score good in SFM but also learn new things. His teaching style is very impressive and he won't let you feel bored anytime. Also he is just a call away just in case you want to clear your doubts or even in exam time. He is also available on whatsapp which not every teacher does.

Sahil Kapoor

For Forex and Derivatives, No one comes close to Kunal Sir. Conceptually well versed and one will fall in love with the subject. I just loved it, SFM plays a very big part for aggregate. Just join Kunal Sir's class and love the journey! Definitely Good Marks will follow.

Ashwin Sundaram

His conceptual teaching, linking a particular topic with the current market scenario, constant motivation, student wise attention and instant reply to all the doubts and queries of any student is something that will help you to achieve great marks in SFM. Also the current affair updates with the international market make it interesting learning with Kunal Sir.

Jesal Chavda

Kunal Sir's methods of teaching makes us understand the toughest of concepts in a very simple way and he makes sure to relate it with current affairs and also encourages to come up with different topics for discussion. If it's SFM, it's definitely Kunal Doshi.

Riddhi Dhakan

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