	M^2: Risk–Adjusted Performance (RAP)	$$M^2 = \left[E(R_p) - R_f\right] \times \frac{\sigma_m}{\sigma_p} - R_f$$	R_p– Expected return of the portfolio R_f – Risk– free rate of interest σ_p – Standard deviation of the portfolio σ_m– Standard deviation of the market portfolio
	Treynor Ratio	$$TR = \frac{E(R_p) - R_f}{\beta_p}$$	$E(R_p)$ – Expected return of the portfolio R_f – Risk– free rate of interest β_p – Beta of the portfolio, a measure of how sensitive the portfolio is to changes in the overall market
	Jensen's Alpha	$$\alpha_p = R_p - \{R_f + \beta_p[\,E(R_m) - R_f]\}$$	R_p – Return of the portfolio R_f – Risk– free rate of interest $E(R_m)$ – Expected return of the market β_p – Beta of the portfolio If α_p is positive, then the portfolio has outperformed the market and vice versa
FINANCIAL REPORTING AND ANALYSIS	Basic EPS	$$\text{Basic EPS} = \frac{\text{Net Income} - \text{Preferred Dividends}}{\text{Weighted Average Shares Outstanding}}$$	EPS – Earnings Per Share
	Diluted EPS (Preference Dividends Converted)	$$\text{Diluted EPS} = \frac{\text{Net Income}}{(\text{Weighted Average Shares Outstanding} + \text{New Common Shares that would have been issued at conversion})}$$	EPS – Earnings Per Share

	Diluted EPS (Bonds Converted)	$$\text{Diluted EPS} = \frac{\text{NI} + \text{Afte tax interest on convertible bond} - \text{Preferred dividends}}{(\text{Weighted Average Shares Outstanding} + \text{Additional common shares that would have been issued at conversion})}$$	NI – Net Income EPS – Earnings Per Share
	Diluted EPS (Stock Options for Executives)	$$\text{Diluted EPS} = \frac{(\text{Net Income} - \text{Preferred Dividends})}{[\text{Weighted average number of shares outstanding} + (\text{New shares that would have been issued at option exercise} - \text{Shares that would have been purchased with cash received upon exercise}) \times (\text{Proportion of year during which the financial instruments were outstanding})]}$$	EPS – Earnings Per Share
	Ending Accounts Receivable	$$\begin{array}{l}\text{Ending Accounts} \\ \text{Receivable}\end{array} = \begin{array}{l}\text{Beginning Accounts} \\ \text{Receivable}\end{array} + \text{Revenues} - \begin{array}{l}\text{Cash Collected from} \\ \text{Customers}\end{array}$$	
	Cash Collected from Customers	Cash Received from Customers = Revenue − Increase in Accounts receivable **OR** $$\text{Cash Received from Customers} = \begin{array}{l}\text{Beginning Accounts} \\ \text{Receivable}\end{array} + \text{Revenues} - \begin{array}{l}\text{Ending Accounts} \\ \text{Receivable}\end{array}$$	
	Cash Paid to Suppliers	Cash paid to Suppliers = Purchases from Suppliers − Increase in Accounts Payable **OR** $$\text{Cash paid to Suppliers} = \begin{array}{l}\text{Cost of goods} \\ \text{Sold}\end{array} + \text{Increase in inventory} - \begin{array}{l}\text{Increase in accounts} \\ \text{Payable}\end{array}$$	
	Ending Inventory	$$\begin{array}{l}\text{Ending} \\ \text{Inventory}\end{array} = \begin{array}{l}\text{Beginning} \\ \text{Inventory}\end{array} + \text{Purchases} - \begin{array}{l}\text{Cost of goods} \\ \text{Sold}\end{array}$$	

Ending Accounts Payable	$$\text{Ending Accounts Payable} = \text{Beginning Accounts Payable} + \text{Purchases} - \text{Cash Paid to Suppliers}$$	
Cash Paid to Employees	$$\text{Cash Paid to Employees} = \text{Salaries and Wages Expense} - \text{Increase in Salary and Wages Payable}$$ **OR** $$\text{Cash Paid to Employees} = \text{Beginning Salary and Wages Payable} + \text{Salary and Wages Expense} - \text{Ending Salary and Wages Payable}$$	
Cash Paid for Operating Expenses	$$\text{Cash paid for Other Operating Expenses} = \text{Other Operating Expenses} - \text{Decrease in in prepaid Expenses} - \text{Increase in other accrued Liabilities}$$	
Cash paid for Interest	$$\text{Cash paid for Interest} = \text{Interest Expense} + \text{Decrease in Interest Payable}$$	
Ending Interest Payable	$$\text{Ending Interest Payable} = \text{Beginning Interest Payable} + \text{Interest Expense} - \text{Cash paid for Interest}$$	
Cash paid for Income Taxes	$$\text{Cash Paid for Income Taxes} = \text{Income Tax Expense} - \text{Increase in Income Tax Payable}$$	

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Free cash flow to the firm (FCFF)	$$FCFF = NI + NCC + Int(1-Taxrate) - FCInv - WCInv$$ **OR** $$FCFF = CFO + Int(1-Taxrate) - FCInv$$		NI – Net income NCC – Non– cash charges (such as depreciation and amortisation) Int – Interest expense FCInv – Capital expenditures (fixed capital, such as equipment) WCInv – Working capital expenditures
Free cash flow to equity (FCFE)	$$FCFE = CFO - FCInv + Net\ borrowing$$ **OR** $$FCFE = CFO - FCInv - Net\ debt\ repayment$$		CFO – Cash flow from operations

Treatment of Temporary Differences	**Balance Sheet Item**	**If:**	**Treatment**	
	Asset	Carrying amount > Tax base	Deferred tax liability	
	Asset	Carrying amount < Tax base	Deferred tax asset	
	Liability	Carrying amount > Tax base	Deferred tax asset	
	Liability	Carrying amount < Tax base	Deferred tax liability	

COGS Adjusted	$$COGS\ (straight-line\ depreciation\ method) - Charges\ in\ inventory\ writedowns$$ $$- Change\ in\ LIFO\ reserve$$	COGS – Cost of Goods Sold LIFO – Last In First Out
Net Income (Adjusted)	$$Net\ Income\ (FIFO\ method) + Charges\ in\ inventory\ writedowns, after\ tax$$	FIFO – First In First Out
Ending Inventory (FIFO)	$$Endnig\ Inventory\ (LIFO) + LIFO\ Reserve$$	LIFO – Last In First Out FIFO – First In First Out

	Ending Retained Earnings	Beginning Retained Earnings + Net Income − Dividends		
	Estimated total useful life	Time elapsed since purchase(Age) + Estimated remaining life		
	Estimated total useful life	$$\dfrac{\text{Historical Cost}}{\text{Annual depreciation expense}}$$		
	Historical cost	Accumulated depreciation + Net PPE		
Ratios	Profitability Ratios	$$\text{Gross Profit Margin} = \dfrac{\text{Gross Profit}}{\text{Revenue}}$$		
		$$\text{Pretax margin} = \dfrac{\text{EBT}}{\text{Revenue}}$$	EBT – Earnings before tax but after interest	
		$$\text{Net Profit Margin} = \dfrac{\text{Net Income}}{\text{Revenue}}$$		

			$$\text{Operating ROA} = \frac{\text{Operating income}}{\text{Average total assets}}$$	
			$$\text{ROA} = \frac{\text{Net Income}}{\text{Average total assets}}$$	
			$$\text{Return on invested capital} = \frac{\text{EBIT}(1 - \text{Effective Tax Rate})}{\text{Average total short and long term debt and equity}}$$	
			$$\text{ROE} = \frac{\text{Net income}}{\text{Average total equity}}$$	
			$$\text{Return on common equity} = \frac{\text{Net income} - \text{Preferred dividends}}{\text{Average common equity}}$$	
			$$\text{Operating Profit Margin} = \frac{\text{EBIT}}{\text{Revenue}}$$	EBIT– Earnings Before Interest and Taxes
		Liquidity Ratios	$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$	
			$$\text{Quick Ratio} = \frac{\text{Cash} + \text{Short term Marketable Investments} + \text{Receivables}}{\text{Current Liabilities}}$$	

			$$\text{Cash Ratio} = \frac{\text{Cash} + \text{Short term Marketable Investments}}{\text{Current Liabilities}}$$	
			Defensive Interval Ratio $$= \frac{\text{Cash} + \text{Short term Marketable Investments} + \text{Receivables}}{\text{Daily cash expenditures}}$$	
			$$\text{Cash Conversion Cycle (net operating cycle)} = \ \text{DSO} + \text{DOH} - \text{DPO}$$	DSO – Days Sales Outstanding DOH – Days of Inventory at Hand DPO – Days Payables Outstanding
		Activity Ratios	$$\text{Receivables Turnover} = \frac{\text{Annual Sales}}{\text{Average Receivables}}$$	
			$$\text{Inventory Turnover} = \frac{\text{COGS}}{\text{Average Inventory}}$$	COGS – Cost of Goods Sold
			$$\text{Payables Turnover} = \frac{\text{COGS}}{\text{Average Payables}}$$	
			$$\text{DSO} = \frac{\text{Number of days in period}}{\text{Receivables Turnover}}$$	DSO – Days of Sales Outstanding
			$$\text{DOH} = \frac{\text{Number of days in period}}{\text{Inventory Turnover}}$$	DOH – Days of Inventory at Hand

			$$\text{DPO} = \frac{\text{Number of days in period}}{\text{Payables Turnover}}$$	DPO – Days of Payables Outstanding
			$$\text{Total Asset Turnover} = \frac{\text{Revenue}}{\text{Average total assets}}$$	
			$$\text{Fixed Asset Turnover} = \frac{\text{Revenue}}{\text{Average Fixed Assets}}$$	
			$$\text{Working Capital Turnover} = \frac{\text{Revenue}}{\text{Average Working Capital}}$$	
		Solvency Ratios	$$\text{Debt} - \text{to} - \text{asset ratio} = \frac{\text{Total Debt}}{\text{Total Assets}}$$	
			$$\text{Debt} - \text{to} - \text{capital ratio} = \frac{\text{Total Debt}}{\text{Total Debt} + \text{Total shareholders'equity}}$$	
			$$\text{Debt} - \text{to} - \text{equity ratio} = \frac{\text{Total Debt}}{\text{Total shareholders'equity}}$$	
			$$\text{Financial leverage ratio} = \frac{\text{Total assets}}{\text{Total Equity}}$$	

			$$\text{Debt} - \text{to} - \text{EBITDA} = \frac{\text{Total or net debt}}{\text{EBITDA}}$$	EBITDA – Earnings before interest, taxes, depreciation, and amortization
			$$\text{Interest coverage} = \frac{\text{EBIT}}{\text{Interest payments}}$$	EBIT – Earnings before interest and taxes
			$$\text{Fixed charge coverage} = \frac{\text{EBIT} + \text{Lease payments}}{\text{Interest payments} +}$$	
		Performance Ratios	$$\text{Cash flow to Revenue} = \frac{\text{CFO}}{\text{Net Revenue}}$$	CFO – Cash flow from operations
			$$\text{Cash Return on Assets} = \frac{\text{CFO}}{\text{Average Total Assets}}$$	CFO – Cash flow from operations
			$$\text{Cash Return on Equity} = \frac{\text{CFO}}{\text{Average Shareholders' Equity}}$$	CFO – Cash flow from operations
			$$\text{Cash to Income} = \frac{\text{CFO}}{\text{Operating Income}}$$	
			$$\text{Cash Flow per Share} = \frac{(\text{CFO} - \text{Preferred Dividends})}{\text{Number of Common Shares Outstanding}}$$	

		Coverage Ratios	$$\text{Debt Coverage} = \frac{\text{CFO}}{\text{Total Debt}}$$	
			$$\text{Interest Coverage} = \frac{(\text{CFO} + \text{Interest paid} + \text{Taxes paid})}{\text{Interest Paid}}$$	
			$$\text{Reinvestment} = \frac{\text{CFO}}{\text{Cash paid for Long term Assets}}$$	
			$$\text{Debt Payment} = \frac{\text{CFO}}{\text{Cash paid for Long term Debt Payment}}$$	
			$$\text{Dividend Payment} = \frac{\text{CFO}}{\text{Dividends paid}}$$	
			$$\text{Investing and Financing} = \frac{\text{CFO}}{\text{Cash outflows for investing and financing activities}}$$	
		DuPont Analysis	**Two - Component DuPont Equation** $$\text{ROE} = \frac{\text{Net income}}{\text{Average shareholders' equity}}$$ $$= \frac{\text{Net income}}{\text{Average total assets}} \times \frac{\text{Average total assets}}{\text{Average shareholders' equity}}$$ $$\therefore \textbf{ROE} = \textbf{ROA} \times \textbf{Leverage}$$	ROE – Return on Equity NI – Net Income

			Three-Component DuPont Equation $$\text{ROE} = \frac{\text{Net income}}{\text{Average shareholders' equity}}$$ $$= \frac{\text{Net income}}{\text{Average total assets}} \times \frac{\text{Average total assets}}{\text{Average shareholders' equity}}$$ $$= \frac{\text{Net income}}{\text{Revenue}} \times \frac{\text{Revenue}}{\text{Average total assets}} \times \frac{\text{Average total assets}}{\text{Average shareholders' equity}}$$ $\therefore$ **ROE = Net Profit margin $\times$ Total asset turnover $\times$ Leverage**	EBIT– Earnings Before Income and Taxes EBT – Earnings Before Tax
			Extended DuPont Equation $$\text{ROE} = \frac{\text{Net income}}{\text{Average shareholders' equity}}$$ $$= \frac{\text{Net income}}{\text{Average total assets}} \times \frac{\text{Average total assets}}{\text{Average shareholders' equity}}$$ $$= \frac{\text{Net income}}{\text{Revenue}} \times \frac{\text{Revenue}}{\text{Average total assets}} \times \frac{\text{Average total assets}}{\text{Average shareholders' equity}}$$ $$= \frac{\text{Net income}}{\text{EBT}} \times \frac{\text{EBT}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{Revenue}} \times \frac{\text{Revenue}}{\text{Average total assets}}$$ $$\times \frac{\text{Average total assets}}{\text{Average shareholders' equity}}$$ $\therefore$ **ROE = Tax burden $\times$ Interest burden $\times$ EBIT margin $\times$ Total asset turnover $\times$ Leverage**	
	Cash Conversion Cycle	$$\text{Cash Conversion Cycle} = \text{DOH} + \text{DSO} - \text{DPO}$$	DOH – Days of inventory on hand DSO – Days sales outstanding DPO – Days payable outstanding

	Effective Annual Rate of Supplier Financing	$\text{EAR of Supplier Financing} = \left(\left(1 + \dfrac{\text{Discount\%}}{100\% - \text{Discount\%}} \right)^{\frac{\text{Days in Year}}{\text{Payment Period} - \text{Discount Period}}} \right) - 1$	EAR – Effective Annual Rate
	Net Present Value (NPV)	$\text{NPV} = \sum_{t=0}^{T} \dfrac{CF_t}{(1+r)^t} = CF_0 + \dfrac{CF_1}{(1+r)^1} + \dfrac{CF_2}{(1+r)^2} + \cdots + \dfrac{CF_T}{(1+r)^T}$	CF_t – After tax cash flow at time t r – Required rate of return
	Project NPV with Real Options	$\text{Project NPV} = \text{NPV (without options)} - \text{Option cost} + \text{Option value}$	
	Return on Invested Capital (ROIC)	$\dfrac{\text{After} - \text{tax operating profit}_t}{\text{Average invested capital}} = \dfrac{(1 - \text{Tax Rate}) \times \text{Operating profit}}{\text{Average total long} - \text{term liabilities and equity}}$	
	Weight of Debt	$\dfrac{D}{E+D}$	D – Debt value E – Equity value
	Weight of Equity	$\dfrac{E}{E+D}$	D – Debt value E – Equity value
	WACC	$\begin{aligned}\text{WACC} &= (\text{Cost of debt} \times \text{Weighting of debt}) + (\text{Cost of equity} \times \text{Weighting of Equity}) \\ &= [(1 - \text{Tax rate}) \times \text{Pre} - \text{tax cost of debt} \times \text{Weighting of debt}] \\ &\quad + (\text{Cost of Equity} \times \text{Weighting of Equity}) \\ &= w_d r_d (1 - t) + w_e r_e\end{aligned}$	WACC – Weighted Average Cost of Capital W_d, W_e – Proportion of debt, and equity that the company uses when it raises new funds r_d – Before– tax marginal cost of debt r_p – Marginal cost of equity t – Company's marginal tax rate

MM Proposition I without Taxes	$$V_L = V_U$$	V_L – Value of the levered firm V_u – Value of the unlevered firm	
MM Proposition II without Taxes	$$r_e = r_0 + (r_0 - r_d)\frac{D}{E}$$	r_0 – Cost of capital for a company financed only by equity and has zero debt r_d – Cost of debt r_e – Cost of equity D/E – Debt– to– equity ratio	
MM Proposition I with taxes	$$V_L = V_U + tD$$	V_L – Value of the levered firm V_u – Value of the unlevered firm t – Marginal tax rate D – Value of debt in the capital structure	
MM Proposition II with taxes	$$r_e = r_0 + (r_0 - r_d)(1 - t)\frac{D}{E}$$		
Value of a leveraged company	$$V_L = V_U + tD - PV(\text{Costs of financial distress})$$	V_u – Value of the unlevered firm t – Marginal tax rate D – Value of debt in the capital structure	
Operating profit	$$\text{Operating Profit} = [Q \times (P - VC)] - FC$$	Q – Units of output sold P – Price per unit of output VC – Variable costs FC – Fixed costs	

	Retention Rate	$$\text{Retention rate} = 1 - \frac{\text{Dividends declared}}{\text{Net income}}$$	
	Sustainable Growth Rate	$$g = b \times ROE$$	g – Growth Rate b – Retention Rate ROE – Return on Equity
	Capital Asset Pricing Model (CAPM) Approach	$$r_e = RFR + \beta[E(R_{mkt}) - RFR]$$	r_e – Cost of equity RFR – Risk– free rate of an asset β – Sensitivity of a stock's return to changes in market return $E(R_{mkt})$ – Expected return on the market
	Bond yield plus risk premium method	$$r_e = \text{bond yield} + \text{risk premium}$$	r_0 – Cost of capital for a company financed only by equity and has zero debt r_d – Cost of debt r_e – Cost of equity D/E - Debt– to– equity ratio
	Estimating Beta	$$\beta_{asset} = \beta_{debt}w_d + \beta_{equity}w_e$$ $$\beta_{asset} = \beta_{equity}\ \frac{1}{1 + (1-t)\frac{D}{E}}$$ $$\beta_{project} = \beta_{asset}\{1 + ((1 - t_{project})\frac{D_{project}}{E_{project}}$$	W_d – Proportion of debt that the company uses when raising new capital W_e – Proportion of equity that the company uses when raising new capital D – Market value of debt E – Market value of equity t – Marginal tax rate

	Retention Rate	$$\text{Retention rate} = 1 - \frac{\text{Dividends declared}}{\text{Net income}}$$	
	Degree of Operating Leverage (DOL)	$$\text{DOL} = \frac{\text{\% change in operating income}}{\text{\% change in units sold}} = \frac{Q(P-V)}{Q(P-V)-F}$$	Q – Number of units P – Price per unit V – Variable operating costs F – Fixed operating costs Q (P − V)– Contribution margin
	Degree of Financial Leverage (DFL)	$$\text{DFL} = \frac{\text{\% change in net income}}{\text{\% change in operating income}} = \frac{Q(P-V)-F}{Q(P-V)-F-C}$$	Q – Number of units P – Price per unit V – Variable operating costs F – Fixed operating costs Q (P − V) – Contribution margin
	Degree of Total Leverage (DTL)	$$\text{DFL} = \text{DFL} \times \text{DOL}$$	DFL – Degree of Financial Leverage DOL - Degree of Operating Leverage
	Margin Call	$$P_o \times \left(\frac{(1 - \text{initial margin\%})}{1 - \text{maintenance margin \%}} \right)$$	P_o – Current share price