1 Free Cash Flow

OPTION A:

$$\begin{array}{r} \text{NOPAT} = \text{EBIT}\ (1-T) \\ +\ \text{Depreciation ex.Amortization} \\ -\ \text{CapEx} \\ -\ \Delta\ \text{non-cash WC} \\ \hline \text{FCF} \end{array}$$

CapEx $= PPE_t - PPE_{t-1} +$Depreciation

WC = CA−CL $\implies$ ΔWC = ΔCA−ΔCL

Common Current Assets:

1. Cash and Cash Equivalents
2. Marketable Securities
3. Accounts Receivable
4. Inventory
5. Prepaid Expenses

Common Current Liabilities:

1. Accounts Payable
2. Accrued Expenses
3. Short-term Debt
4. Current Portion of Long-term Debt
5. Unearned Revenue

OPTION B:

$$\begin{array}{r} \text{Net Income} \\ +\ \text{Depreciation ex.Amortization} \\ -\ \text{CapEx} \\ -\ \Delta\ \text{non-cash WC} \\ +\ \text{Interest Expense}\ (1-T) \\ \hline \text{FCF} \end{array}$$

2 Unlevered Beta

$$\beta_l = \beta_u \times \left[1 + \frac{D}{E}(1-T)\right]$$

$$\beta_u = \beta_l \div \left[1 + \frac{D}{E}(1-T)\right]$$

β_l is the CAPM equity beta.
β_u only captures *business* risk.

From practice problems:

Step 1: Calculate β_u ***using comps***

Step 2: Sub β_u^{step1} into ***firm*** β_l

Note: Step 2 is when you "lever up" the unlevered beta from step 1 with your own firm's D/E ratio.

If the private firms equity beta, β_l^{step2}, is *lower* than the public comparable firms average equity beta $\implies$ the private firm has *lower* leverage (i.e., a smaller $\frac{D}{E}$).

Step 3: Cost of Equity, Cost of Debt

Step 4: WACC

3 Cost of Capital

$$\text{WACC} = \left(\frac{E}{V}\right) R_e + \left(\frac{D}{V}\right) R_d \times (1-T)$$

where:

- E = Market value of the equity
- V = Total market value of the firm's financing (Equity + Debt)
- R_e = Cost of equity
- D = Market value of the debt
- R_d = Cost of debt
- T = Corporate tax rate

$R_e \overset{\text{CAPM}}{=} R_f + \beta_l(1-R_f)$

R_d = Observable based on corporate debt issuance (e.g. the aggregate YTM on BBB rated bonds).

4 VC stuff

4.1 Required % Ownership

- Discount Terminal Value at required rate of return, r: $\frac{\text{EBITDA @ Exit}}{(1+r)^N}$
- Calculate $\frac{\text{VC financing}}{\text{Discounted Terminal Value}}$

Final answer is the second bullet point. If asked for equity conversion value, plug all necessary information into Excel using =FV(r, N years, q*PV, PV).

4.2 IRR calculations

a) common stock w/o CF

EV @ t = EBITDA$_t$ $*$ multiple$_t$

net EV @ t = EV$_t$ − Debt + Cash

V_e = [net EV @ t] * % own

IRR $\overset{\text{Cash Sweep*}}{=} \left(\frac{V_e \text{ @ Exit}}{V_e \text{ @ Purchase}}\right)^{1/N} - 1$

*cash sweep means no dividends.

- ☐ net EV @ exit
- ☐ req. % ownership (% own)
- ☐ find V_e @ exit and V_e @ purchase
- ☐ calculate IRR by hand

b) Convertible Debt w/ CF

IRR $\overset{\text{.xlxs}}{=}$ IRR(-VC funding, CF)

where: the final CF is adjusted by adding the *equity conversion @ exit.*

conversion @ exit = % * [net EV @ exit]

- ☐ VC funding
- ☐ equity conversion @ exit (dollars)
- ☐ Lay out the cashflows from Year 0 through Year X
- ☐ calculate IRR in Excel

c) Preferred Stock

IRR $\overset{\text{.xlxs}}{=}$ IRR(-VC funding, CF)

where: the final CF is adjusted by adding *principal returned @ exit.*

principal returned = % * VC funding

- ☐ VC funding
- ☐ Lay out the cashflows from Year 0 through Year X
- ☐ calculate IRR in Excel

(b) and (c) including warrants:
simply adjust the final CF again...

- add: equity obtained @ exit via exercising warrants
- subtract: cost of exercising warrants

eq. obtained @ exit = % * [net EV @ exit]

4.3 Runs of VC Financing

- if a VC purchases 5 million shares of the 20 million shares outstanding in a Series A funding round, then its initial percentage ownership is 25%
- if a Series B investment involves issuing 5 million shares, ownership of Series A investors drops to 20%
- The retention percentage of Series A investors is 0.20/.25 = 80%

5 M&A stuff

5.1 Synergies

Revenue Synergies: increase selling power, expand market share, boost sales by selling complements.

Cost Synergies: supply discounts, eliminate redundancy to lower operational costs.

5.2 Combined Firm Value

$A + T + S$, where:

- \$A = acquirer's pre-deal equity value
- \$T = target's pre-deal equity value
- \$S = synergies

5.3 Accretion vs. Dilution

accretive deals:
Combined EPS > acquirers stand-alone

dilutive deals:
Combined EPS < acquirers stand-alone

Acquirer share price increases after the acquisition if:

$$\frac{A+T+S}{\text{N}_A + x} > \frac{A}{\text{N}_A}$$

where:

- N$_A$ = acquirer's pre-deal shares out.
- N$_T$ = target's pre-deal shares out.
- acquirer "tenders" (issues) x new share to pay for the target.