Discounted Cash Flow (DCF) Model (Academic Quality)

Step 1: Forecast Free Cash Flows

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Term
Revenue	100.0	110.0	116.6	121.3	124.9	127.4	
% Growth YoY		10%	6%	4%	3%	2%	2%
COGS	40.0	44.0	46.6	48.5	50.0	51.0	
% COGS Margin	40%	40%	40%	40%	40%	40%	
GPM	60.0	66.0	70.0	72.8	74.9	76.4	
Op Ex	20.0	22.0	23.3	24.3	25.0	25.5	
% OpEx Margin	20%	20%	20%	20%	20%	20%	
EBITDA	40.0	44.0	46.6	48.5	50.0	51.0	52.0
DA	10.0	11.0	11.7	12.1	12.5	12.7	
EBIT	30.0	33.0	35.0	36.4	37.5	38.2	
NOPAT aka. EBIT(1-T)	19.5	21.5	22.7	23.6	24.4	24.8	
DA	10.0	11.0	11.7	12.1	12.5	12.7	
Change in [O]WC	-5.0	-5.5	-5.8	-6.1	-6.2	-6.4	
Capex	-12.0	-13.2	-14.0	-14.6	-15.0	-15.3	
FCF	12.5	13.8	14.6	15.2	15.6	15.9	16.2
FCF (Discounted)	11.6	11.8	11.6	11.1	10.6	10.0	

Step 2: Calculate Terminal Value

Terminal Value (Growth Model)	
Terminal Value @	6
FCF(next)	16.2
WACC	8.0%
g	2%
Terminal EV	270.0
Implied EV / EBITDA	5.2x
Terminal Value (Multiple Method)	
EV / EBITDA Multiple	5.0x
EBITDA	52.0
Implied Terminal EV	259.9
Average Terminal EV	265.0
PV of Terminal EV	166.8

Step 3: Discount all values to PV

Tax	35%	
kd	7.0%	
wd	30%	
RFR	3.5%	
beta	1.2	
ERP	5.0%	
ke	9.5%	
we	70%	
WACC	8.0%	
Value of Cash Flows	$66.7	29%
Terminal Value	$166.8	71%
Total Enterprise Value	$233.5	100%

Step 4: Calculate Implied Share Price

Total Debt	$70.1
Excess Cash	$30.0
Net Debt	$40.1
Implied Equity Value	$193.5
Number of Shares	100
Implied Share Price	$1.93

Download DCF guide and model at http://amgstr.blogspot.com/2010/12/dcf.html

1. How do you calculate Free Cash Flow?

Unlevered Free Cash Flow = EBIT (1 – Tax) + DA – Change in Working Capital – Capital Expenditure

2. How do you calculate terminal value?

Method 1: Growth Model

FCF_1 / (WACC – g)

Method 2: Multiples

EV = EV Multiple x EBITDA

3. What discount rate do you use?

Weighted average cost of capital (WACC) – use a discount rate whose stakeholders match the free cash flow. Note: if you use free cash flow to equity (FCFE), the appropriate rate is the cost of equity (ke).

3.a How do you calculate WACC?

WACC = kd x (1 – Tax Rate) x wd + ke x we

kd = cost of debt

wd = weight of debt

ke = cost of equity

we = weight of equity

3.b How do you calculate cost of equity (ke)

Using Capital Asset Pricing Model (CAPM):

ke = RFR + beta x (ERP)

3.c What would you use for the Risk Free Rate?

10 or 30 year government treasury yield

3.d How do you find beta for an IPO?

Beta is based on historic data, so an IPO won't have an observable or equity beta. Unlever comparable company betas, average (as industry or asset betas should be the same) and relever based on new company capital structure.

4. How do you get to share price from EV?

EV = Market Cap + Net Debt

Net Debt = Total Debt – Cash

Market Cap = EV – Nebt Debt = Price per share x Number of shares