

Discounted Cash Flow: Forecast Drivers

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Last Time

Discounted Cash Flow (DCF)

- Free Cash Flow

This Time Discounted Cash Flow (DCF)

- Forecast Drivers

Forecast Drivers

$$\begin{aligned} \text{FCF} = & (\text{Revenue} - \text{Costs} - \text{Depreciation}) \times (1 - t_c) \\ & + \text{Depreciation} - \text{Capital Expenditures} \\ & - \text{Change in Net Working Capital} \end{aligned}$$



$$\text{FCF} = (\text{Revenue} - \text{Costs} - \text{Depreciation}) \times (1 - t_c) \\ + \text{Depreciation} - \text{Capital Expenditures} \\ - \text{Change in Net Working Capital}$$

$$\text{Revenue} = \text{Market Size} \times \text{Market Share} \times \text{Price}$$

$$\text{FCF} = (\text{Revenue} - \text{Costs} - \text{Depreciation}) \times (1 - t_c) + \text{Depreciation} - \text{Capital Expenditures} - \text{Change in Net Working Capital}$$

$$\text{Revenue} = \text{Market Size} \times \text{Market Share} \times \text{Price}$$

Project Assumptions

Revenue Forecasts

Market Forecasts

Initial Market Size (Units, million)

Market Growth Rate

Market Size (Units, million)

Year					
0 (F2008)	1	2	3	4	5

1.00					
	2500.00%	128.0%	9.4%	3.5%	
1.0	26.0	59.3	64.9	67.1	

$$\text{FCF} = (\text{Revenue} - \text{Costs} - \text{Depreciation}) \times (1 - t_c) + \text{Depreciation} - \text{Capital Expenditures} - \text{Change in Net Working Capital}$$

$$\text{Revenue} = \text{Market Size} \times \text{Market Share} \times \text{Price}$$

Project Assumptions

Revenue Forecasts

Market Forecasts

Initial Market Size (Units, million)

Market Growth Rate

Market Size (Units, million)

(Actual Market Size, Units Mil)

Year					
0 (F2008)	1	2	3	4	5

1.00				
	2500.00%	128.0%	9.4%	3.5%
1.0	26.0	59.3	64.9	67.1
1.0	60.0	116.3	195.4	229.0

$$\text{FCF} = (\text{Revenue} - \text{Costs} - \text{Depreciation}) \times (1 - t_c) + \text{Depreciation} - \text{Capital Expenditures} - \text{Change in Net Working Capital}$$

$$\text{Revenue} = \text{Market Size} \times \text{Market Share} \times \text{Price}$$

Project Assumptions

Revenue Forecasts

Market Forecasts

Initial Market Size (Units, million)

Market Growth Rate

Market Size (Units, million)

(Actual Market Size, Units Mil)

Corp Market Share

Initial Market Share

Market Share Annual Growth Rate

Market Share

Year					
0 (F2008)	1	2	3	4	5

1.00					
	2500.00%	128.0%	9.4%	3.5%	
1.0	26.0	59.3	64.9	67.1	
1.0	60.0	116.3	195.4	229.0	

25.00%					
	5.00%	5%	5%	5%	
25.0%	26.3%	27.6%	28.9%	30.4%	

$$\text{FCF} = (\text{Revenue} - \text{Costs} - \text{Depreciation}) \times (1 - t_c) + \text{Depreciation} - \text{Capital Expenditures} - \text{Change in Net Working Capital}$$

$$\text{Revenue} = \text{Market Size} \times \text{Market Share} \times \text{Price}$$

Project Assumptions

Revenue Forecasts

Market Forecasts

Initial Market Size (Units, million)

Market Growth Rate

Market Size (Units, million)

(Actual Market Size, Units Mil)

Corp Market Share

Initial Market Share

Market Share Annual Growth Rate

Market Share

Pricing Strategy

Initial Unit Price (\$/unit)

Bi-Annual Price Increases (\$/unit)

Unit Price (\$/unit)

	Year				
0 (F2008)	1	2	3	4	5

1.00					
	2500.00%	128.0%	9.4%	3.5%	
1.0	26.0	59.3	64.9	67.1	
1.0	60.0	116.3	195.4	229.0	

25.00%					
	5.00%	5%	5%	5%	
25.0%	26.3%	27.6%	28.9%	30.4%	

200.00					
	-	49.99	-	49.99	
200.00	200.00	249.99	249.99	299.98	

$$\text{FCF} = (\text{Revenue} - \text{Costs} - \text{Depreciation}) \times (1 - t_c) + \text{Depreciation} - \text{Capital Expenditures} - \text{Change in Net Working Capital}$$

$$\text{Costs} = \text{Cost Margin} \times \text{Revenue}$$

Project Assumptions

Operating Expenses

COGS

COGS / Sales (% Sales)

SG&A

1% of 2008 Company SG&A (\$mil)

SG&A Expense Growth Rate

Year					
0 (F2008)	1	2	3	4	5

80.66%	80.66%	80.66%	80.66%	80.66%	80.66%
--------	--------	--------	--------	--------	--------

69.59

25.00%	25.00%	25.00%	25.00%
--------	--------	--------	--------

$$\text{FCF} = (\text{Revenue} - \text{Costs} - \text{Depreciation}) \times (1 - t_c) + \text{Depreciation} - \text{Capital Expenditures} - \text{Change in Net Working Capital}$$

$$\text{Costs} = \text{R\&D Expenditures}$$

Project Assumptions

Operating Expenses

COGS

COGS / Sales (% Sales)

SG&A

1% of 2008 Company SG&A (\$mil)

SG&A Expense Growth Rate

R&D

R&D Upfront (\$mil)

R&D for Versioning (\$mil)

Year					
0 (F2008)	1	2	3	4	5

80.66%	80.66%	80.66%	80.66%	80.66%	80.66%
--------	--------	--------	--------	--------	--------

69.59

25.00%	25.00%	25.00%	25.00%
--------	--------	--------	--------

200.00

25.00	25.00	25.00	25.00	25.00
-------	-------	-------	-------	-------

$$\text{FCF} = (\text{Revenue} - \text{Costs} - \text{Depreciation}) \times (1 - t_c) + \text{Depreciation} - \text{Capital Expenditures} - \text{Change in Net Working Capital}$$

Capital Expenditures

Project Assumptions

Capital Expenditures & PP&E Information

Initial Investment (Fixed Cost, \$mil)

Future Investment (% of initial Investment)

Future Investment (Annual Growth)

Year					
0 (F2008)	1	2	3	4	5
227.70					
	10.0%				
		5.0%	1.0%	1.0%	1.0%

$$\text{FCF} = (\text{Revenue} - \text{Costs} - \text{Depreciation}) \times (1 - t_c) \\ + \text{Depreciation} - \text{Capital Expenditures} \\ - \text{Change in Net Working Capital}$$

Capital Expenditures

Project Assumptions

Capital Expenditures & PP&E Information

Initial Investment (Fixed Cost, \$mil)

Future Investment (% of initial Investment)

Future Investment (Annual Growth)

PP&E Liquidation Value

	Year				
0 (F2008)	1	2	3	4	5
227.70					
	10.0%				
		5.0%	1.0%	1.0%	1.0%
50.00%	50.0%	50.0%	50.0%	50.0%	50.0%

$$\text{FCF} = (\text{Revenue} - \text{Costs} - \text{Depreciation}) \times (1 - t_c) \\ + \text{Depreciation} - \text{Capital Expenditures} \\ - \text{Change in Net Working Capital}$$

Depreciation

Project Assumptions

Capital Expenditures & PP&E Information

Initial Investment (Fixed Cost, \$mil)

Future Investment (% of initial Investment)

Future Investment (Annual Growth)

PP&E Liquidation Value

PP&E life for depreciation (Years)

*Straight line depreciation

	Year				
0 (F2008)	1	2	3	4	5
227.70					
	10.0%				
		5.0%	1.0%	1.0%	1.0%
50.00%	50.0%	50.0%	50.0%	50.0%	50.0%
5.00	5	5	5	5	5

$$\begin{aligned}\text{FCF} = & (\text{Revenue} - \text{Costs} - \text{Depreciation}) \times (1 - t_c) \\ & + \text{Depreciation} - \text{Capital Expenditures} \\ & - \text{Change in Net Working Capital}\end{aligned}$$

$$\text{Net Working Capital} = \text{Cash} + \text{Inventory} + \text{AR} - \text{AP}$$

$$\text{FCF} = (\text{Revenue} - \text{Costs} - \text{Depreciation}) \times (1 - t_c) \\ + \text{Depreciation} - \text{Capital Expenditures} \\ - \text{Change in Net Working Capital}$$

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Project Assumptions

Working Capital Assumptions

Cash Requirements

% of SG&A

% R&D Expenditures

Year					
0 (F2008)	1	2	3	4	5

50.00%	50%	50%	50%	50%	50%
100.00%	100%	100%	100%	100%	100%

$$\text{FCF} = (\text{Revenue} - \text{Costs} - \text{Depreciation}) \times (1 - t_c) \\ + \text{Depreciation} - \text{Capital Expenditures} \\ - \text{Change in Net Working Capital}$$

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Project Assumptions

Working Capital Assumptions

Cash Requirements

% of SG&A

% R&D Expenditures

Inventory

Inventory Days (365 x Inventory / COGS)

Excess Inventory liquidation value (% of Inventory Cost)

Year					
0 (F2008)	1	2	3	4	5

50.00%	50%	50%	50%	50%	50%
100.00%	100%	100%	100%	100%	100%

7.58	7.58	7.58	7.58	7.58	7.58
					25.00%

$$\text{FCF} = (\text{Revenue} - \text{Costs} - \text{Depreciation}) \times (1 - t_c) \\ + \text{Depreciation} - \text{Capital Expenditures} \\ - \text{Change in Net Working Capital}$$

$$\text{Net Working Capital} = \text{Cash} + \text{Inventory} + \text{AR} - \text{AP}$$

Project Assumptions

Working Capital Assumptions

Cash Requirements

% of SG&A

% R&D Expenditures

Inventory

Inventory Days (365 x Inventory / COGS)

Excess Inventory liquidation value (% of Inventory Cost)

Accounts Receivable

Days Receivable (365 x Accounts Receivable / Sales)

Year					
0 (F2008)	1	2	3	4	5

50.00%	50%	50%	50%	50%	50%
100.00%	100%	100%	100%	100%	100%

7.58	7.58	7.58	7.58	7.58	7.58
					25.00%

38.49	38.49	38.49	38.49	38.49	38.49
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$$\text{FCF} = (\text{Revenue} - \text{Costs} - \text{Depreciation}) \times (1 - t_c) \\ + \text{Depreciation} - \text{Capital Expenditures} \\ - \text{Change in Net Working Capital}$$

$$\text{Net Working Capital} = \text{Cash} + \text{Inventory} + \text{AR} - \text{AP}$$

Project Assumptions

Working Capital Assumptions

Cash Requirements

% of SG&A

% R&D Expenditures

Inventory

Inventory Days (365 x Inventory / COGS)

Excess Inventory liquidation value (% of Inventory Cost)

Accounts Receivable

Days Receivable (365 x Accounts Receivable / Sales)

Accounts Payable

Days Payable (365 x Accounts Payable / COGS)

Year					
0 (F2008)	1	2	3	4	5

50.00%	50%	50%	50%	50%	50%
100.00%	100%	100%	100%	100%	100%

7.58	7.58	7.58	7.58	7.58	7.58
					25.00%

38.49	38.49	38.49	38.49	38.49	38.49
-------	-------	-------	-------	-------	-------

61.54	61.54	61.54	61.54	61.54	61.54
-------	-------	-------	-------	-------	-------

$$\begin{aligned} \text{FCF} = & (\text{Revenue} - \text{Costs} - \text{Depreciation}) \times (1 - t_c) \\ & + \text{Depreciation} - \text{Capital Expenditures} \\ & - \text{Change in Net Working Capital} \end{aligned}$$

$$\begin{aligned} \Delta \text{ Net Working Capital} = & \text{Net Working Capital (t)} \\ & - \text{Net Working Capital (t-1)} \end{aligned}$$

where Δ = change over one period

$$\text{FCF} = (\text{Revenue} - \text{Costs} - \text{Depreciation}) \times (1 - t_c) \\ + \text{Depreciation} - \text{Capital Expenditures} \\ - \text{Change in Net Working Capital}$$

Taxes

We want the marginal tax rate (MTR)
=
Tax rate on additional \$ of earnings
25.5%

This is Nonsense!

This is Nonsense!

Impossible to make accurate forecasts!

This is Nonsense!

Impossible to make accurate forecasts!

I agree, but that's not the point!!!!

Lesson: Point of DCF is to focus discussion and analysis on relevant issues

Lesson: Successful valuation (i.e., decision making) depends critically on input from non-finance personnel

Summary

Lessons

- **Forecast Drivers** are the assumptions used to populate our free cash flow forecasts
- Goal is to establish framework for discussion
 - Think about value drivers

Coming up next

- Discounted Cash Flow (DCF)
 - Forecasting free cash flow