# Discounted Cash Flow: Forecasting Free Cash Flows

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# Last Time Discounted Cash Flow (DCF)

Forecast drivers

# This Time Discounted Cash Flow (DCF)

Forecasting free cash flows

# Forecasting Free Cash Flows

FCF = (Revenue – Costs – Depreciation) x  $(1 - t_C)$ 

- + Depreciation Capital Expenditures
- Change in Net Working Capital

Translate forecast drivers into \$ forecasts

#### **Project Assumptions**

#### **Revenue Forecasts**

Market Forecasts

Initial Market Size (Units, million)

Market Growth Rate

Market Size (Units, million)

(Actual Market Size, Units Mil)

Dell's 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

249.99

249.99

299.9

200.00

### Change in Net Working Capital

			Yea	r		
Project Assumptions	0 (F2008)	1	2	3	4	5
Revenue Forecasts						
Market Forecasts						
Initial Market Size (Units, million)		1.00				
Market Growth Rate			2500.00%	128.0%	9.4%	3.5%
Market Size (Units, million)		1.0	26.0	59.3	64.9	67.1
(Actual Market Size, Units Mil)		1.0	60.0	116.3	195.4	229.0
Dell's Market Share					•	
Initial Market Share		25.00%				
Market Share Annual Growth Rate			5.00%	5%	5%	5%
Market Share		25.0%	26.3%	27.6%	28.9%	30.4%
Pricing Strategy						
Initial Unit Price (\$/unit)		200.00				
Bi-Annual Price Increases (\$/unit)			-	49.99	-	49.99
Unit Price (\$/unit)		200.00	200.00	249.99	249.99	299.98

#### Revenue = Market Size x Market Share x Price

Change in Net Working Capital

	Year						
Project Assumptions	0 (F2008)	1	2	3	4	5	
Revenue Forecasts							
Market Forecasts							
Initial Market Size (Units, million)		1.00					
Market Growth Rate			2500.00%	128.0%	9.4%	3.5%	
Market Size (Units, million)		1.0	26.0	59.3	64.9	67.1	
(Actual Market Size, Units Mil)		1.0	60.0	116.3	195.4	229.0	
Dell's Market Share							
Initial Market Share		25.00%	_				
Market Share Annual Growth Rate			5.00%	5%	5%	5%	
Market Share		25.0%	26.3%	27.6%	28.9%	30.4%	
Pricing Strategy							
Initial Unit Price (\$/unit)		200.00					
Bi-Annual Price Increases (\$/unit)			-	49.99	-	49.99	
Unit Price (\$/unit)		200.00	200.00	249.99	249.99	299.98	

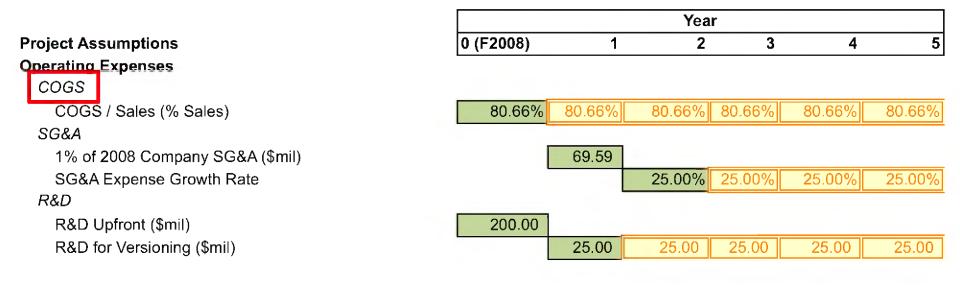
Revenue  $1 = 1.0 \times 0.25 \times 200 = 50$ 

Change in Net Working Capital

Incremental Earnings Forecasts
Sales

		Yea	r		
0	1	2	3	4	5
14	50.0	1,365.0	4,084.6	4,692.0	6,116.9

	Year						
Project Assumptions	0 (F2008)	1	2	3	4	5	
Operating Expenses							
COGS							
COGS / Sales (% Sales)	80.66%	80.66%	80.66%	80.66%	80.66%	80.66%	
SG&A							
1% of 2008 Company SG&A (\$mil)		69.59					
SG&A Expense Growth Rate			25.00%	25.00%	25.00%	25.00%	
R&D		_					
R&D Upfront (\$mil)	200.00						
R&D for Versioning (\$mil)		25.00	25.00	25.00	25.00	25.00	



**Incremental Earnings Forecasts**Sales

 Year

 0
 1
 2
 3
 4
 5

 50.0
 1,365.0
 4,084.6
 4,692.0
 6,116.9

COGS = (COGS / Sales) x Sales Year 1: 0.8066 x 50.0 = 40.33

#### **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%
	20.50				
	69.59	_			
		25.00%	25.00%	<b>2</b> 5.00%	25.00%

200.00					
	25.00	25.00	25.00	25.00	25.00

#### **Incremental Earnings Forecasts**

Sales

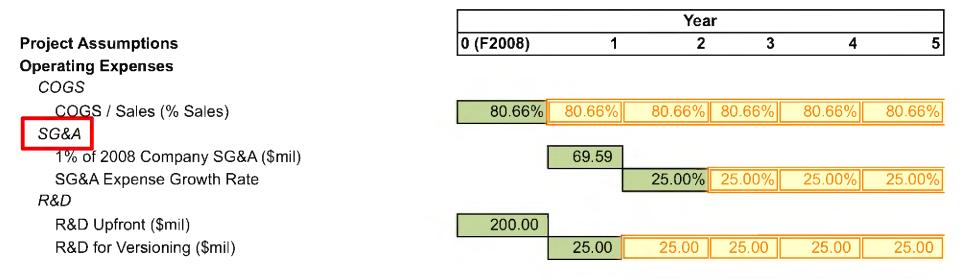
Year						
0	0 1 2 3 4					
	50.0	1,365.0	4,084.6	4,692.0	6,116.9	

Year							
0	1	2	3	4	5		
	40.3	1,101.0	3,294.6	3,784.6	4,933.9		

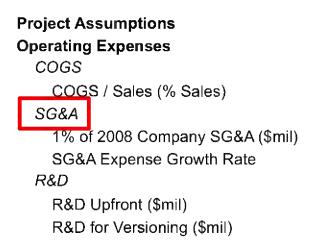
### Incremental Earnings Forecasts COGS

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Change in Net Working Capital



Year 1: SG&A = 1% of '08 SG&A  
= 
$$0.01 \times $6,959 = $69.6$$
  
Year 2 – 5: SG&A = 25% Annual Growth Rate  
=  $$69.59 \times (1+0.25) = $87.0$ 



		icai			
0 (F2008)	1	2	3	4	5
80.66%	80.66%	80.66%	80.66%	80.66%	80.66%
Г	69.59				
l	09.59	25.00%	25.00%	25.00%	25.00%
200.00					
200.00	25.00	25.00	25.00	25.00	25.00

Year

Increme	ntal Ea	arnings	<b>Forecasts</b>
SG&A			

Year						
0	1	2	3	4	5	
	69.6	87.0	108.7	135.9	169.9	

Voor

			reai	ſ		
Project Assumptions	0 (F2008)	1	2	3	4	5
Operating Expenses						
COGS						
COGS / Sales (% Sales)	80.66%	80.66%	80.66%	80.66%	80.66%	80.66%
SG&A						
1% of 2008 Company SG&A (\$mil)	I	69.59				
SG&A Expense Growth Rate			25.00%	25.00%	25.00%	25.00%
R&D						
R&D Upfront (\$mil)	200.00					
R&D for Versioning (\$mil)		25.00	25.00	25.00	25.00	25.00

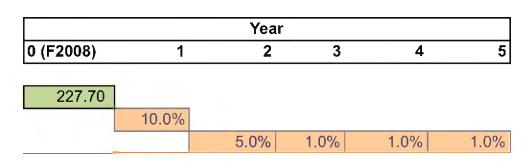
	Year					
Incremental Earnings Forecasts	0	1	2	3	4	5
R&D	200.0	25.0	25.0	25.0	25.0	25.0

	Year					
Incremental Earnings Forecasts	0	1	2	3	4	5
Sales	A X I	<u>50.0</u>	1,365.0	4,084.6	4,692.0	6,116.9
COGS	· 4 ()	40.3	1,101.0	3,294.6	3,784.6	4,933.9
Gross Profit = (28) - (29)	0.0	9.7	264.0	790.0	907.4	1,183.0
SG&A		69.6	87.0	108.7	135.9	169.9
R&D	200.0	25.0	25.0	25.0	25.0	25.0
EBITDA = (30) - (31) - (32)	-200.0	-84.9	152.0	656.2	746.5	988.1

# Change in Net Working Capital

# Project Assumptions Capital Expenditures & PP&E Information Initial Investment (Fixed Cost \$\pi\_{mil}\)

Initial Investment (Fixed Cost, \$mil)
Future Investment (% of initial Investment)
Future Investment (Annual Growth)



FCF = (Revenue – Costs – Depreciation) x  $(1 - t_C)$ 

- + Depreciation Capital Expenditures
- Change in Net Working Capital

Project Assumptions
Capital Expenditures & PP&E Information
Initial Investment (Fixed Cost, \$mil)
Future Investment (% of initial Investment)
Future Investment (Annual Growth)



Year 0: Initial investment = 227.7

 $FCF = (Revenue - Costs - Depreciation) x (1 - t_C)$ 

- + Depreciation Capital Expenditures
- Change in Net Working Capital

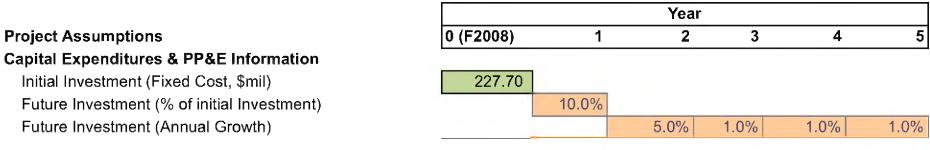
	Year					
Project Assumptions	0 (F2008)	1	2	3	4	5
Capital Expenditures & PP&E Information						
Initial Investment (Fixed Cost, \$mil)	227.70					
Future Investment (% of initial Investment)		10.0%				
Future Investment (Annual Growth)			5.0%	1.0%	1.0%	1.0%

Year 0: Initial investment = 227.7

Year 1: 10% of initial investment =  $0.10 \times \$227.7 = \$22.77$ 

 $FCF = (Revenue - Costs - Depreciation) x (1 - t_C)$ 

- + Depreciation Capital Expenditures
- Change in Net Working Capital



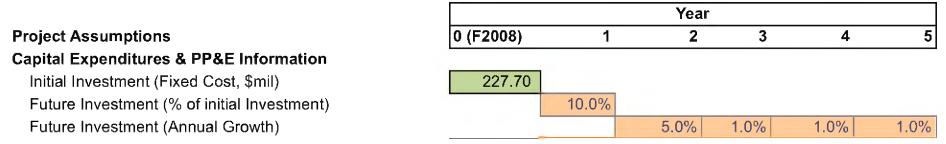
Year 0: Initial investment = 227.7

Year 1: 10% of initial investment =  $0.10 \times \$227.7 = \$22.77$ 

Year 2: 5% annual growth =  $$22.77 \times (1+0.05) = $23.9$ 

# FCF = (Revenue – Costs – Depreciation) x $(1 - t_C)$

- + Depreciation Capital Expenditures
- Change in Net Working Capital



Year 0: Initial investment = 227.7

Year 1: 10% of initial investment =  $0.10 \times \$227.7 = \$22.77$ 

Year 2: 5% annual growth =  $$22.77 \times (1+0.05) = $23.9$ 

Year 3-5: 1% annual growth =  $$23.9 \times (1+0.01) = $24.1$ 

#### **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					

227.70					
	10.0%				
		5.0%	1.0%	1.0%	1.0%

		Yea	ır		
0	1	2	3	4	5
227.7	22.8	23.9	24.1	24.4	24.6

#### **Capital Expenditure Forecasts**

Project CapEx

FCF = (Revenue – Costs – Depreciation) x 
$$(1 - t_C)$$
 + Depreciation – Capital Expenditures

Change in Net Working Capital

Capital Expenditure Forecasts
Project CapEx



+

Straight line depreciation over 5 years

Change in Net Working Capital

#### **Capital Expenditure Forecasts**

Project CapEx
Accumulated CapEx
Depreciation

Year							
0	1	2	3	4	5		
227.7	22.8	23.9	24.1	24.4	24.6		
227.7	250.5	274.4	298.5	322.9	347.5		
	45.5	50.1	54.9	59.7	64.6		

Year 1: \$227.7 / 5 = \$45.5

# FCF = (Revenue – Costs – Depreciation) x $(1 - t_C)$

+ Depreciation - Capital Expenditures

Change in Net Working Capital

#### **Capital Expenditure Forecasts**

Project CapEx
Accumulated CapEx
Depreciation

Year							
0	1	2	3	4	5		
227.7	22.8	23.9	24.1	24.4	24.6		
227.7	250.5	274.4	298.5	322.9	347.5		
	45.5	50.1	54.9	59.7	64.6		

Year 1: 227.7 / 5 = 45.5

Year 2: 250.5 / 5 = 50.1

# FCF = (Revenue – Costs – Depreciation) x $(1 - t_C)$

- + Depreciation Capital Expenditures
- Change in Net Working Capital

#### **Capital Expenditure Forecasts**

Project CapEx Accumulated CapEx Depreciation

		Yea	ır		
0	1	2	3	4	5
227.7	22.8	23.9	24.1	24.4	24.6
227.7	250.5	274.4	298.5	322.9	347.5
	45.5	50.1	54.9	59.7	64.6

What happens to all of that physical capital?

### $FCF = (Revenue - Costs - Depreciation) x (1 - t_C)$

- + Depreciation Capital Expenditures
- Change in Net Working Capital

Year					
0	1	2	3	4	5
227.7	22.8	23.9	24.1	24.4	24.6
227.7	250.5	274.4	298.5	322.9	347.5
	45.5	50.1	54.9	59.7	64.6
					<b>72.8</b>
					36.4
					45.6
		227.7 250.5	0     1     2       227.7     22.8     23.9       227.7     250.5     274.4	0     1     2     3       227.7     22.8     23.9     24.1       227.7     250.5     274.4     298.5	0     1     2     3     4       227.7     22.8     23.9     24.1     24.4       227.7     250.5     274.4     298.5     322.9

### $FCF = (Revenue - Costs - Depreciation) x (1 - t_C)$

- + Depreciation Capital Expenditures
- Change in Net Working Capital

	Year					
Capital Expenditure Forecasts	0	1	2	3	4	5
Project CapEx	227.7	22.8	23.9	24.1	24.4	24.6
Accumulated CapEx	227.7	250.5	274.4	298.5	322.9	347.5
Depreciation		45.5	50.1	54.9	59.7	64.6
Book Value of CapEx						72.8
Liquidation Value (LV)						→ 36.4
After tax proceeds from asset sale						45.6

 $= 72.8 \times 0.50$ 

= 36.4

### FCF = (Revenue – Costs – Depreciation) x $(1 - t_c)$

- + Depreciation Capital Expenditures
- Change in Net Working Capital

Year						
Capital Expenditure Forecasts	0	1	2	3	4	5
Project CapEx	227.7	22.8	23.9	24.1	24.4	24.6
Accumulated CapEx	227.7	250.5	274.4	298.5	322.9	347.5
Depreciation		45.5	50.1	54.9	59.7	64.6
Book Value of CapEx						72.8
Liquidation Value (LV)						36.4
After tax proceeds from asset sale						<b>45.6</b>

After-tax proceeds = 
$$LV - (LV - Book Value) x Tax Rate$$
  
=  $36.4 - (36.4 - 72.8) x 0.255$   
=  $45.6$ 

### FCF = (Revenue – Costs – Depreciation) x $(1 - t_C)$

- + Depreciation Capital Expenditures
- Change in Net Working Capital

Capital	Expenditure	Forecasts
---------	-------------	-----------

Project CapEx

Accumulated CapEx

Depreciation

Book Value of CapEx

Liquidation Value (LV)

After tax proceeds from asset sale

Net Project CapEx

	Yea	r		
1	2	3	4	5
22.8	23.9	24.1	24.4	24.6
250.5	274.4	298.5	322.9	347.5
45.5	50.1	54.9	59.7	64.6
				72.8
				36.4
				45.6
22.8	23.9	24.1	24.4	-21.0
	250.5 45.5	1 2 22.8 23.9 250.5 274.4 45.5 50.1	22.8     23.9     24.1       250.5     274.4     298.5       45.5     50.1     54.9	1     2     3     4       22.8     23.9     24.1     24.4       250.5     274.4     298.5     322.9       45.5     50.1     54.9     59.7

Year 5: 24.6 - 45.6 = -21.0

FCF = (Revenue – Costs – Depreciation) x  $(1 - t_C)$ 

- + Depreciation Capital Expenditures
- Change in Net Working Capital

Net Working Capital = Cash + Inventory + AR – AP

Change in Net Working Capital

			rear	•		
Project Assumptions	0 (F2008)	1	2	3	4	5
Working Capital Assumptions						
Cash Requirements	_					
% of SG&A	50.00%	50%	50%	50%	50%	50%
% R&D Expenditures	100.00%	100%	100%	100%	100%	100%
Inventory						
Inventory Days (365 x Inventory / COGS)	7.58	7.58	7.58	7.58	7.58	7.58
Excess Inventory liquidation value (% of Inventory Cost)						25.00%
Accounts Receivable					_	
Days Receivable (365 x Accounts Receivable / Sales)	38.49	38.49	38.49	38.49	38.49	38.49
Accounts Payable						
Days Payable (365 x Accounts Payable / COGS)	61.54	61.54	61.54	61.54	61.54	61.54

Change in Net Working Capital

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%

Change in Net Working Capital

# 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%

		Yea	r		
0	1	2	3	4	5
	69.6	87.0	108.7	135.9	169.9
200.0	25.0	25.0	25.0	25.0	25.0

#### **Incremental Earnings Forecasts**

SG&A R&D

Cash for SG&A: 50% of SG&A

Year 1:  $0.50 \times $69.6 = $34.8$ 

Change in Net Working Capital

# 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%

Year							
0	1	2	3	4	5		
	69.6	87.0	108.7	135.9	169.9		
200.0	25.0	25.0	25.0	25.0	25.0		

#### **Incremental Earnings Forecasts**

SG&A R&D

Cash for SG&A: 50% of SG&A

Year 1:  $0.50 \times $69.6 = $34.8$ 

Cash for R&D: 100% of R&D

Year 1:  $1.00 \times $25.0 = $25.0$ 

Change in Net Working Capital

# **Project Assumptions Working Capital Assumptions**

Cash Requirements

% of SG&A

% R&D Expenditures

#### **Incremental Earnings Forecasts**

SG&A

R&D

#### **Working Capital Forecasts**

Cash Requirements - SG&A Funding Cash Requirements - R&D Funding Cash

		Year			
0 (F2008)	1	2	3	4	5

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

Year							
0	1	2	3	4	5		
	69.6	87.0	108.7	135.9	169.9		
200.0	25.0	25.0	25.0	25.0	25.0		

Year							
0	1	2	3	4	5		
	34.8	43.5	54.4	68.0	84.9		
	25.0	25.0	25.0	25.0	25.0		
	59.8	68.5	79.4	93.0	109.9		

Change in Net Working Capital

		Year				
Project Assumptions	0 (F2008)	1	2	3	4	5
Inventory		_				
Inventory Days (365 x Inventory / COGS)	7.58	7.58	7.58	7.58	7.58	7.58

25.00%

Excess Inventory liquidation value (% of Inventory Cost)

Change in Net Working Capital

#### **Project Assumptions**

Inventory

Inventory Days (365 x Inventory / COGS)

Excess Inventory liquidation value (% of Inventory Cost)

		Year	r		
0 (F2008)	1	2	3	4	5
			_		
7.58	7.58	7.58	7.58	7.58	7.58

		25.00%

#### Incremental Earnings Forecasts COGS

Year									
0	1	2	3	4	5				
	40.3	1,101.0 3,	294.6	3,784.6	4,933.9				

Change in Net Working Capital

	Year					
Project Assumptions	0 (F2008)	1	2	3	4	5
Inventory						
Inventory Days (365 x Inventory / COGS)	7.58	7.58	7.58	7.58	7.58	7.58
Excess Inventory liquidation value (% of Inventory Cost)						25.00%

Incremental Earnings Forecasts
COGS

		Yea	r		
0	1	2	3	4	5
	40.3	1,101.0	3,294.6	3,784.6	4,933.9

Inventory = Inventory Days x COGS / 365 Year 1: Inventory =  $7.58 \times 40.3 / 365 = 0.837$ 

7.58

7.58

Change in Net Working Capital

#### **Project Assumptions**

Inventory

Inventory Days (365 x Inventory / COGS)

Excess Inventory liquidation value (% of Inventory Cost)

		Year			
0 (F2008)	1	2	3	4	5
		-			_

7.58

25.00%

7.58

Incremental	<b>Earnings</b>	Forecasts
0000		

COGS

Year								
0	1	2	3	4	5			
	40.3	1,101.0 3,	294.6	3,784.6	4,933.9			

#### **Working Capital Forecasts**

Inventory

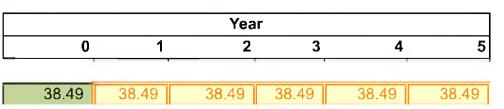
Year							
0	1	2	3	4	5		
	0.8	22.9	68.4	78.6	102.5		

#### Change in Net Working Capital

#### **Working Capital Forecasts**

Accounts Receivable

Days Receivable (365 x Accounts Receivable / Sales)



Change in Net Working Capital

#### **Working Capital Forecasts**

Accounts Receivable

Days Receivable (365 x Accounts Receivable / Sales)

		Year			
0	1	2	3	4	5
			- 1	***	
38.49	38.49	38.49	38.49	38.49	38.49

#### Incremental Earnings Forecasts Sales

Year									
0	1	2	3	4	5				
	50.0	1,365.0	4,084.6	4,692.0	6,116.9				

AR = AR Days x Sales / 365

Year 1:  $AR = 38.49 \times $50.0 / 365 = $5.272$ 

#### Change in Net Working Capital

#### **Working Capital Forecasts**

Accounts Receivable

Days Receivable (365 x Accounts Receivable / Sales)

Year										
0	1	2	3	4	5					
38.49	38.49	38.49	38.49	38.49	38.49					

#### Incremental Earnings Forecasts

Sales

Year									
0 1 2 3 4									
	50.0	1,365.0	4,084.6	4,692.0	6,116.9				

#### **Working Capital Forecasts**

Accounts Receivable

Year								
0 1 2 3 4								
	5.3	143.9	430.7	494.8	645.0			

Change in Net Working Capital

#### **Working Capital Forecasts**

Accounts Payable

Days Payable (365 x Accounts Payable / COGS)

	Year									
0	0 1		3	4	5					
			1		· '					
61.54	61.54	61.54	61.54	61.54	61.54					

Change in Net Working Capital

#### **Working Capital Forecasts**

Accounts Payable

Days Payable (365 x Accounts Payable / COGS)

Year										
0	1	2	3	4	5					
61.54	61.54	61.54	61.54	61.54	61.54					

#### Incremental Earnings Forecasts COGS

Year									
0	1	2	3	4	5				
	40.3	1,101.0 3,2	294.6	3,784.6	4,933.9				

 $AP = AP Days \times COGS / 365$ 

Year 1:  $AR = 61.54 \times $40.3 / 365 = $6.794$ 

Change in Net Working Capital

#### **Working Capital Forecasts**

Accounts Payable

Days Payable (365 x Accounts Payable / COGS)

Year										
0	1	2	3	4	5					
61.54	61.54	61.54	61.54	61.54	61.54					

#### Incremental Earnings Forecasts

COGS

Year								
0	1	2	3	4	5			
	40.3	1,101.0 3,2	294.6	3,784.6	4,933.9			

#### **Incremental Earnings Forecasts**

Acounts Payable

Year								
0	1	2	3	4	5			
	6.8	185.6	555.5	638.1	831.9			

Change in Net Working Capital

	Year					
Working Capital Forecasts	0	1	2	3	4	5
Cash Requirements - SG&A Funding		34.8	43.5	54.4	68.0	84.9
Cash Requirements - R&D Funding		25.0	25.0	25.0	25.0	25.0
Cash		59.8	68.5	79.4	93.0	109.9
Inventory		8.0	22.9	68.4	78.6	102.5
Accounts Receivable		5.3	143.9	430.7	494.8	645.0
Acounts Payable		6.8	185.6	555.5	638.1	831.9
Net Working Capital	0	59.1	49.7	23.0	28.2	25.6

Net Working Capital = Cash + Inventory + AR – AP

Change in Net Working Capital

	Year					
Working Capital Forecasts	0	1	2	3	4	5
Cash Requirements - SG&A Funding		34.8	43.5	54.4	68.0	84.9
Cash Requirements - R&D Funding		25.0	25.0	25.0	25.0	25.0
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What happens to this working capital?

Change in Net Working Capital

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Recovered NWC at end of Project						51.3

(Most of) it is recovered!

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Recovered NWC at end of Project						51.3

(Most of) it is recovered!

- Cash - Inventory x Recovery Rate - AR + AP Year 5:  $-109.90 - 102.5 \times 0.25 - 645 + 831.9 = 51.375$ 

Change in Net Working Capital

	Year					
Working Capital Forecasts	0	1	2	3	4	5
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Cash Requirements - R&D Funding		25.0	25.0	25.0	25.0	25.0
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Net Working Capital	0	59.1	49.7	23.0	28.2	25.6
Recovered NWC at end of Project						51.3
Change in NWC		59.1	-9.4	<b>-26</b> .6	5.2	48.6

Change in NWC =  $\Delta$ NWC = NWC(t) – NWC(t-1)

FCF = (Revenue – Costs – Depreciation) x  $(1 - t_c)$ + Depreciation – Capital Expenditures – Change in Net Working Capital

We have all the pieces. Organize into a useful (and familiar) format

# (Quasi-) Income Statement

	Year					
Incremental Earnings Forecasts	0	1	2	3	4	5
Sales	4	<u>50.0</u>	1,365.0	4,084.6	4,692.0	6,116.9
COGS		40.3	1,101.0	3,294.6	3,784.6	4,933.9
Gross Profit = (28) - (29)	0.0	9.7	264.0	790.0	907.4	1,183.0
SG&A		69.6	87.0	108.7	135.9	169.9
R&D	200.0	25.0	25.0	25.0	25.0	25.0
EBITDA = (30) - (31) - (32)	-200.0	-84.9	152.0	656.2	746.5	988.1
Depreciation		45.5	50.1	54.9	59.7	64.6
EBIT = (33) - (34)	-200.0	-130.5	101.9	601.4	686.8	923.5
Taxes	-50.9	-33.2	25.9	153.0	174.8	235.0
NOPAT (35) - (36) (a.k.a. EBIAT, Unlevered Net Income)	-149.1	-97.3	76.0	448.3	512.0	688.5

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✓NOPAT 🐔

FCF = (Revenue – Costs – Depreciation) x  $(1 - t_C)$ 

- + Depreciation Capital Expenditures
- Change in Net Working Capital

#### FCF = (Revenue – Costs – Depreciation) x $(1 - t_C)$

- + Depreciation Capital Expenditures
- Change in Net Working Capital

	Year					
Free Cash Flow Forecasts	0	1	2	3	4	5
NOPAT (Unlevered Net Income, EBIAT)	-149.1	-97.3	76.0	448.3	512.0	688.5
Depreciation		45.5	50.1	54.9	59.7	64.6
Capital Expenditures	227.7	22.8	23.9	24.1	24.4	-21.0
Changes in NWC		59.1	-9.4	-26.6	5.2	48.6
Free Cash Flows = (38) +(39) - (40) - (41)	-376.8	-133.6	111.6	505.7	542.1	725.5

# Other Free Cash Flow Considerations

- Opportunity Costs (Alternative uses of resources)
- Project Externalities (Cannibalization, spillovers,)
- Sunk Costs (Ignore)
- Other non-cash items (E.g., amortization)
- Salvage values (Assets do not disappear)
- Execution Risk (Idiosyncratic)
- Cash flow frequency (Project dependent)



### Lessons

 Forecasting free cash flows is a matter of converting our forecast drivers into dollar forecasts

 One of the two basic inputs into a DCF

# Coming up next

- Discounted Cash Flow (DCF)
  - -Decision Criteria