

Financial Modeling

– Certification Quiz Questions

Module 8 – 1-Week Valuation and DCF Case Study: Jazz Pharmaceuticals

1. You are completing a set of Comparable Public Companies (“Public Comps”) in the valuation of a pharmaceutical company. As part of this process, you review each company’s filings and decide which non-recurring charges, if any, you should add back when calculating EBITDA.

Consider the excerpts of Emergent BioSolutions’ Income Statement and Cash Flow Statement shown below:

Revenues:	
Product sales	\$ 296,278
Contract manufacturing	49,138
Contracts and grants	<u>143,366</u>
Total revenues	488,782
Operating expenses:	
Cost of product sales and contract manufacturing	131,284
Research and development	108,290
Selling, general and administrative	<u>143,686</u>
Income from operations	105,522
Other income (expense):	
Interest income	1,053
Interest expense	(7,617)
Other income (expense), net	<u>263</u>
Total other expense, net	(6,301)
Income from continuing operations before provision for income taxes	99,221
Provision for income taxes	<u>36,697</u>
Net income from continuing operations	62,524
Net loss from discontinued operations	<u>(10,748)</u>
Net income	<u><u>\$ 51,776</u></u>

Cash flows from operating activities:

Net income	\$ 51,776
Adjustments to reconcile to net cash provided by (used in) operating activities:	
Stock-based compensation expense	18,477
Depreciation and amortization	38,229
Income taxes	5,190
Change in fair value of contingent obligations	(10,838)
Write off of debt issuance costs	-
Impairment of intangible assets (including IPR&D)	701
Impairment and abandonment of long-lived assets	5,569
Bad debt expense	-

If you're calculating EBITDA starting with Operating Income on the Income Statement, which of these potential non-recurring charges should you NEVER add back – and why?

- a. Stock-based compensation, because it is a recurring operating expense that affects the company's diluted share count (despite being non-cash).
- b. Income taxes, because the EBITDA calculation completely ignores taxes and deferred taxes, and Operating Income is before any tax expense.
- c. The write-off of debt issuance costs, because this appears within Interest Expense or Other Expenses, below the Operating Income line.
- d. Both impairment charges, because they also tend to appear below the Operating Income line, usually in Other Expenses.
- e. All of the above; i.e., you should not add back ANY of these line items when calculating EBITDA.
- f. Answer choices 1, 2, and 3.
- g. Answer choices 2 and 4.
- h. Answer choices 2, 3, and 4.
- i. Answer choices 3 and 4.

2. You have created a set of 10-year Unlevered Free Cash Flow projections for this same pharmaceutical company. As part of this exercise, you have also projected the Stock-Based Compensation, Amortization of Intangible Assets, and Deferred Taxes for the company.

The UFCF projections are shown below:

Unlevered Free Cash Flow Projections:	Units:	Projected									
		FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26
Total Revenue:	\$ M	1,730.7	2,069.3	2,425.6	2,812.4	1,027.2	1,150.2	1,274.4	1,401.9	1,532.6	1,668.2
Revenue Growth:	%	16.3%	19.6%	17.2%	15.9%	(63.5%)	12.0%	10.8%	10.0%	9.3%	8.8%
Cost of Product Sales:	\$ M	121.1	144.8	167.4	194.1	69.9	78.2	85.4	93.9	102.7	111.8
Gross Profit:	\$ M	1,609.5	1,924.4	2,258.2	2,618.3	957.4	1,072.0	1,189.0	1,307.9	1,429.9	1,556.4
Gross Margin:	%	93.0%	93.0%	93.1%	93.1%	93.2%	93.2%	93.3%	93.3%	93.3%	93.3%
Operating Expenses:											
(+) Selling, General, and Administrative:	\$ M	614.0	767.7	932.7	1,123.0	422.0	481.4	543.6	609.4	686.2	769.3
(+) Research and Development:	\$ M	190.4	248.3	315.3	393.7	154.1	172.5	191.2	210.3	229.9	250.2
(+) Intangible Asset Amortization:	\$ M	102.1	99.4	99.2	98.0	97.1	95.7	95.7	95.7	95.7	95.7
Total Operating Expenses:	\$ M	906.5	1,115.4	1,347.2	1,614.8	673.2	749.6	830.4	915.4	1,011.8	1,115.3
Operating Income (EBIT):	\$ M	703.0	809.0	911.0	1,003.5	284.2	322.3	358.6	392.6	418.1	441.2
Operating (EBIT) Margin:	%	40.6%	39.1%	37.6%	35.7%	27.7%	28.0%	28.1%	28.0%	27.3%	26.4%
(-) Taxes, Excluding Effect of Interest:	\$ M	(179.3)	(206.3)	(232.3)	(255.9)	(72.5)	(82.2)	(91.4)	(100.1)	(106.6)	(112.5)
Net Operating Profit After Tax (NOPAT):	\$ M	523.8	602.7	678.7	747.6	211.7	240.1	267.2	292.5	311.5	328.7
Adjustments for Non-Cash Charges:											
(+) Intangible Asset Amortization:	\$ M	102.1	99.4	99.2	98.0	97.1	95.7	95.7	95.7	95.7	95.7
(+) Depreciation:	\$ M	15.6	18.6	21.8	28.1	10.3	11.5	12.7	14.0	15.3	16.7
(+/-) Deferred Income Taxes:	\$ M	(54.7)	(60.2)	(66.7)	(73.8)	(42.8)	(44.9)	(47.2)	(49.4)	(51.8)	(54.2)
(+/-) Other Items:	\$ M	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)
Total Adjustments for Non-Cash Charges:	\$ M	61.4	56.3	52.7	50.9	63.0	60.7	59.8	58.8	57.7	56.7
Total Changes in Operating Assets & Liabilities:	\$ M	(34.0)	(45.7)	(46.3)	(48.4)	214.2	(14.8)	(14.9)	(15.3)	(15.7)	(16.3)
% Change in Revenue:	%	(14.0%)	(13.5%)	(13.0%)	(12.5%)	(12.0%)	(12.0%)	(12.0%)	(12.0%)	(12.0%)	(12.0%)
(-) Capital Expenditures:	\$ M	(26.0)	(31.0)	(38.8)	(45.0)	(17.5)	(19.6)	(22.9)	(25.2)	(27.6)	(30.0)
% Revenue:	%	1.5%	1.5%	1.6%	1.6%	1.7%	1.7%	1.8%	1.8%	1.8%	1.8%
Annual Unlevered Free Cash Flow:	\$ M	525.2	582.3	646.3	705.1	471.5	266.6	289.1	310.7	326.0	339.1

The Stock-Based Compensation expense is embedded within the SG&A and R&D line items under Operating Expenses. Deferred Income Taxes are equal to – (Amortization of Intangible Assets + Stock-Based Compensation) * Tax Rate.

A co-worker reviews your analysis and claims that it's pointless to project Stock-Based Compensation and the Amortization of Intangible Assets because both are non-cash expenses that are also not Cash-Tax Deductible, so they make no net impact on UFCF.

Is he correct or incorrect? And why?

- a. Yes, he's correct because they're both non-cash expenses that also result in no Cash-Tax differences for the company, as seen in the formula for Deferred Income Taxes.
 - b. No, he's incorrect. We can eliminate the Amortization of Intangibles, but we cannot eliminate Stock-Based Compensation because it's counted as a true cash operating expense that also produces no Cash-Tax savings.
 - c. No, he's incorrect. Neither item affects the company's UFCF, but both affect its EBITDA, which is used in the Terminal Value calculation at the end.
 - d. No, he's incorrect. If Stock-Based Compensation were a separate line item, as the Amortization of Intangibles is, we could eliminate it, but since it's embedded within R&D and SG&A, it's not possible to do so in this case.
3. Continuing with this same analysis, you also create a Normalized Terminal Year to represent the first year of the Terminal Period in the DCF.

Then, when you use the Perpetuity Growth Rate method to calculate the Terminal Value, you use the UFCF in this Normalized Terminal Year rather than taking the UFCF from Year 10 and multiplying it by $(1 + \text{Terminal Growth Rate})$.

The UFCF projections, including this Normalized Terminal Year, are shown below:

Unlevered Free Cash Flow Projections:	Units:	Projected										Normalized
		FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27
Total Revenue:	\$ M	1,730.7	2,069.3	2,425.6	2,812.4	1,027.2	1,150.2	1,274.4	1,401.9	1,532.6	1,668.2	1,718.2
Revenue Growth:	%	16.3%	19.6%	17.2%	15.9%	(63.5%)	12.0%	10.8%	10.0%	9.3%	8.8%	3.0%
Cost of Product Sales:	\$ M	121.1	144.8	167.4	194.1	69.9	78.2	85.4	93.9	102.7	111.8	115.1
Gross Profit:	\$ M	1,609.5	1,924.4	2,258.2	2,618.3	957.4	1,072.0	1,189.0	1,307.9	1,429.9	1,556.4	1,603.1
Gross Margin:	%	93.0%	93.0%	93.1%	93.1%	93.2%	93.2%	93.3%	93.3%	93.3%	93.3%	93.3%
Operating Expenses:												
(+) Selling, General, and Administrative:	\$ M	614.0	767.7	932.7	1,123.0	422.0	481.4	543.6	609.4	686.2	769.3	
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Operating (EBIT) Margin:	%	40.6%	39.1%	37.6%	35.7%	27.7%	28.0%	28.1%	28.0%	27.3%	26.4%	31.2%
(-) Taxes, Excluding Effect of Interest:	\$ M	(179.3)	(206.3)	(232.3)	(255.9)	(72.5)	(82.2)	(91.4)	(100.1)	(106.6)	(112.5)	(136.7)
Net Operating Profit After Tax (NOPAT):	\$ M	523.8	602.7	678.7	747.6	211.7	240.1	267.2	292.5	311.5	328.7	399.4
Adjustments for Non-Cash Charges:												
(+) Intangible Asset Amortization:	\$ M	102.1	99.4	99.2	98.0	97.1	95.7	95.7	95.7	95.7	95.7	-
(+) Depreciation:	\$ M	15.6	18.6	21.8	28.1	10.3	11.5	12.7	14.0	15.3	16.7	17.2
(+/-) Deferred Income Taxes:	\$ M	(54.7)	(60.2)	(66.7)	(73.8)	(42.8)	(44.9)	(47.2)	(49.4)	(51.8)	(54.2)	(30.7)
(+/-) Other Items:	\$ M	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)
Total Adjustments for Non-Cash Charges:	\$ M	61.4	56.3	52.7	50.9	63.0	60.7	59.8	58.8	57.7	56.7	(15.0)
Total Changes in Operating Assets & Liabilities:	\$ M	(34.0)	(45.7)	(46.3)	(48.4)	214.2	(14.8)	(14.9)	(15.3)	(15.7)	(16.3)	(6.0)
% Change in Revenue:	%	(14.0%)	(13.5%)	(13.0%)	(12.5%)	(12.0%)	(12.0%)	(12.0%)	(12.0%)	(12.0%)	(12.0%)	(12.0%)
(-) Capital Expenditures:	\$ M	(26.0)	(31.0)	(38.8)	(45.0)	(17.5)	(19.6)	(22.9)	(25.2)	(27.6)	(30.0)	(30.9)
% Revenue:	%	1.5%	1.5%	1.6%	1.6%	1.7%	1.7%	1.8%	1.8%	1.8%	1.8%	1.8%
Annual Unlevered Free Cash Flow:	\$ M	525.2	582.3	646.3	705.1	471.5	266.6	289.1	310.7	326.0	339.1	347.4

Which of the following statements about this Normalized Terminal Year is NOT necessarily true (i.e., either false or impossible to determine without additional information)?

- The removal of the Intangible Asset Amortization in this year makes a small difference because it's a non-cash expense that is also not Cash-Tax Deductible.
- Normalized Terminal Years are common for biotech/pharmaceutical companies because if a patent or exclusivity period expires near the end of the final projected year, cash flows in the Terminal Period could look very different.
- The main effect is that the Operating Margin, excluding Intangible Asset Amortization, is slightly lower in this Normalized Terminal Year, so the company's UFCF in Year 1 of the Terminal Period is slightly lower than it would be if we multiplied the Year 10 UFCF by $(1 + \text{Terminal Growth Rate})$.

- d. This Normalized Terminal Year reduces the company's implied value because we're using a much lower Revenue Growth Rate (3% rather than 9-10% in the two preceding years).
 - e. All of the above; i.e., none of these statements is necessarily true.
 - f. Answer choices 1 and 3.
 - g. Answer choices 1 and 4.
 - h. Answer choices 1, 3, and 4.
 - i. Answer choices 3 and 4.
4. You're done with this DCF analysis, but now you want to add support for the mid-year convention and a stub period.

Currently, it's May 1st, and the company has just released its Q1 earnings, covering the period from January 1st to March 31st. You plan to take your full-year projections for the first projected year and subtract the UFCF generated in Q1 to get the UFCF for Q2 – Q4 of the year.

Based on this information, which number should you use for the discount period for the NEXT full projected year from January 1st to December 31st?

- a. 1.167.
- b. 1.333.
- c. 1.667.
- d. 0.833.