Financial Modeling Mastery – Certification Quiz Questions

Module 7 – 3-Hour Valuation and DCF Case Study from Blank Sheet (Steel Dynamics)

1. You have set up Unlevered Free Cash Flow (UFCF) projections for a DCF analysis of a steel manufacturing company based in the U.S., as shown below:

		Historical			Projected				
Steel Dynamics Inc. - FCF Projections:	*Units:*	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Revenue:	*$ M*	**$ 7,372.9**	**$ 8,756.0**	**$ 7,594.4**	**$ 7,716.0**	**$ 8,406.2**	**$ 9,259.3**	**$ 10,127.2**	**$ 11,006.6**
Revenue Growth Rate:	*%*	*1.1%*	*18.8%*	*(13.3%)*	*1.6%*	*8.9%*	*10.1%*	*9.4%*	*8.7%*
Operating Income (EBIT):	*$ M*	**386.8**	**580.3**	**355.7**	**379.4**	**461.2**	**566.3**	**660.0**	**789.2**
Operating Margin:	*%*	*5.2%*	*6.6%*	*4.7%*	*4.9%*	*5.5%*	*6.1%*	*6.5%*	*7.2%*
Growth Rate:	*%*	*(1.1%)*	*50.0%*	*(38.7%)*	*6.7%*	*21.6%*	*22.8%*	*16.5%*	*19.6%*
(-) Taxes, Excluding Effect of Interest:	*$ M*	(96.7)	(145.1)	(88.9)	(94.9)	(115.3)	(141.6)	(165.0)	(197.3)
Net Operating Profit After Taxes (NOPAT):	*$ M*	**290.1**	**435.2**	**266.8**	**284.6**	**345.9**	**424.7**	**495.0**	**591.9**
Adjustments for Non-Cash Charges:									
(+) Depreciation & Amortization:	*$ M*	230.9	263.3	294.6	246.9	269.0	268.5	293.7	308.2
% Revenue:	*%*	3.1%	3.0%	3.9%	3.2%	3.2%	2.9%	2.9%	2.8%
(+/-) Deferred Income Taxes:	*$ M*	30.7	(25.0)	(99.3)	23.7	23.1	21.2	16.5	19.7
% Income Statement Taxes:	*%*	30.9%	(34.2%)	102.5%	25.0%	20.0%	15.0%	10.0%	10.0%
Net Change in Working Capital:	*$ M*	**(129.9)**	**8.1**	**527.5**	**(6.1)**	**(34.5)**	**(42.7)**	**(43.4)**	**(44.0)**
% Change in Revenue:	*%*	(157.1%)	0.6%	(45.4%)	(5.0%)	(5.0%)	(5.0%)	(5.0%)	(5.0%)
% Revenue:	*%*	*(1.8%)*	*0.1%*	*6.9%*	*(0.1%)*	*(0.4%)*	*(0.5%)*	*(0.4%)*	*(0.4%)*
(-) Capital Expenditures:	*$ M*	**(186.8)**	**(111.8)**	**(114.5)**	**(246.9)**	**(269.0)**	**(268.5)**	**(293.7)**	**(308.2)**
% Revenue:	*%*	(2.5%)	(1.3%)	(1.5%)	(3.2%)	(3.2%)	(2.9%)	(2.9%)	(2.8%)
Unlevered Free Cash Flow:	*$ M*	**$ 235.0**	**$ 569.8**	**$ 875.1**	**$ 302.2**	**$ 334.5**	**$ 403.3**	**$ 468.1**	**$ 567.7**
Growth Rate:	*%*	*N/A*	*142.4%*	*53.6%*	*(65.5%)*	*10.7%*	*20.6%*	*16.1%*	*21.3%*

This company has Operating Leases but no Finance Leases. Which of the following answer choices represent(s) a potential PROBLEM(s) with these projections?

a. The projection period may be too short, as UFCF is still growing quickly by Year 8 (far above the perpetuity growth rate typically assumed in the Terminal Period).

b. CapEx equals D&A in each projected year, even though the company's revenue is growing at 8-10% annually in most of the projected period.

c. EBIT and NOPAT are not properly adjusted for the Operating Lease Expense.

d. Deferred Income Taxes contribute far too much to UFCF in the projected period.

e. The Change in Working Capital as a % of the Change in Revenue is too consistent in the projected period; it has fluctuated significantly in the historical years, so it should do that going forward as well.

f. All of the above.

g. Answer choices 1 and 2.

h. Answer choices 1, 2, and 3.

i. Answer choices 1, 2, and 4.

j. Answer choices 1, 2, 4, and 5.

2. You're now completing a DCF for a similar steel manufacturing company based in the U.S., and you've calculated its Terminal Value based on the Multiples Method, as shown below:

Terminal Value - Multiples Method:	
Median Year 2 TEV / EBITDA of Comps:	8.0 x
Current Year 2 TEV / EBITDA of Target:	12.0 x
Baseline Terminal EBITDA Multiple:	7.0 x
Baseline Terminal Value:	$ 14,244.1
Implied Terminal FCF Growth Rate:	(0.7%)
(+) PV of Terminal Value:	6,687.2
(+) PV of UFCFs:	6,135.0
Implied Enterprise Value:	**12,822.2**
% of Implied TEV from Terminal Value:	*52.2%*

This company operates in a highly cyclical industry, and its EBITDA multiples have fluctuated between 6x and 12x historically. Expected long-term GDP growth is in the 2-3% range.

Based on this description and the numbers above, would you recommend adjusting these baseline assumptions? If so, why? If not, why not?

a. No – the PV of the Terminal Value contributes a reasonable percentage to the Implied Enterprise Value, and the Implied Terminal FCF Growth Rate is below the expected long-term GDP growth rate, as it should be.

b. No – the PV of the Terminal Value contributes a reasonable percentage to the Implied Enterprise Value, and for highly cyclical companies like this one, it's best to assume that long-term FCF growth is negative, with a Terminal Multiple near the bottom of the historical trading range.

c. Yes – even if the company is in a cyclical industry, long-term FCF growth is unlikely to be *negative*, and the Terminal Multiple is too low relative to the EBITDA multiple of the comparable companies and the company's current multiple.

d. Yes – the PV of the Terminal Value should contribute well above 50% of the Implied Enterprise Value, and the baseline Terminal Multiple should generally be *above* the comparable companies' median multiple.

3. You are now calculating WACC for this same company. You plan to calculate the Cost of Equity with the standard method, i.e., Risk-Free Rate + Equity Risk Premium * Relevered Beta, with Relevered Beta based on the company's current capital structure and the median Unlevered Beta from the comparable companies.

   The Cost of Debt is based on the Yield to Maturity (YTM) of the company's outstanding Debt, using the "average" maturity date across all tranches. These calculations are shown below:

WACC Analysis - Steel Dynamics Inc.

($ USD in Millions Except Per Share Amounts in USD as Stated)

Discount Rate Calculations - Assumptions:	
Risk-Free Rate:	1.20%
Equity Risk Premium:	5.50%
Pre-Tax Cost of Debt:	2.22%
Cost of Preferred Stock:	–

Comparable Companies - Unlevered Beta Calculation:

Name	Levered Beta	Debt	% Debt	Preferred Stock	% Preferred	Equity Value	% Equity	Tax Rate	Unlevered Beta
Nucor Corporation	1.40	$ 5,938.2	16.1%	$ -	–	$ 30,949.0	83.9%	23.0%	1.22
Cleveland-Cliffs Inc.	2.30	6,601.0	33.1%	738.0	3.7%	12,625.0	63.2%	25.0%	1.59
United States Steel Corp.	2.27	6,314.0	46.5%	-	–	7,265.1	53.5%	25.0%	1.37
Commercial Metals Company	1.28	1,122.9	21.9%	-	–	4,008.0	78.1%	25.0%	1.06
Allegheny Technologies Incorporated	1.90	1,847.7	41.5%	-	–	2,609.4	58.5%	25.0%	1.24
Schnitzer Steel Industries, Inc.	1.40	153.8	9.6%	-	–	1,450.6	90.4%	23.0%	1.29
Median:	**1.65**	**$ 3,893.0**	**27.5%**	**$ -**	**–**	**$ 5,636.5**	**70.7%**	**25.0%**	**1.27**
Steel Dynamics Inc.	**1.45**								

Steel Dynamics Inc. - Levered Beta & WACC Calculation:

	Unlevered Beta	Debt	% Debt	Preferred Stock	% Preferred	Equity Value	% Equity	Tax Rate	Levered Beta
Current Capital Structure:	1.27	$ 3,412.6	20.0%	$ -	–	$ 13,614.8	80.0%	21.4%	1.52

Besides this approach, which of the following represent(s) other VALID method(s) for calculating the Cost of Debt and Cost of Equity for public companies?

a. The Cost of Equity could also use Relevered Beta based on the median capital structure percentages of the comparable public companies.

b. The Cost of Equity could also use the company's historical Levered Beta, based on its stock-price performance against the most relevant index.

c. The Cost of Equity could also be based on the company's Net Income / Current Equity Value + Average Net Income Growth Rate.

d. The Cost of Debt could also be based on the median or average YTM of the comparable companies' Debt issuances.

e. The Cost of Debt could also be based on the Risk-Free Rate + a Credit Default Spread linked to the company's credit rating (assuming the company currently has Debt).

f. All of the above.

g. Answer choices 1, 4, and 5.

h. Answer choices 1, 2, 4, and 5.

i. Answer choices 1, 3, 4, and 5.

4. You are now completing a Comparable Company Analysis ("CCA" or "Public Comps") for this same company, and you're trying to decide on the proper screening criteria. You run several screening reports on Capital IQ and count the number of companies produced by each criteria set(described below).

   The U.S.-based company you're valuing has an LTM Revenue of approximately $10 billion with an EBITDA of $1.5 billion.

   Which of the following is the BEST screen for this company's Public Comps?

   a. U.S. and Canadian steel manufacturing companies with LTM Revenue above $5 billion USD; 15 companies in the set.

   b. U.S., Canadian, and European steel manufacturing companies with LTM EBITDA above $1 billion USD; 12 companies in the set.

   c. U.S. steel manufacturing companies with LTM Revenue above $5 billion and a Current Enterprise Value of less than $10 billion; 6 companies in the set.

   d. U.S. steel manufacturing companies with LTM Revenue above $5 billion; 8 companies in the set.

   e. It's impossible to answer this question without knowing the median valuation multiples of the companies in each screening report.

5. Which of the following is NOT one of the key differences between Comparable Public Companies and Precedent Transactions in a valuation?

    a. In theory, the valuation multiples produced by the Precedent Transactions should be higher because of the control premiums that acquirers pay for target companies.

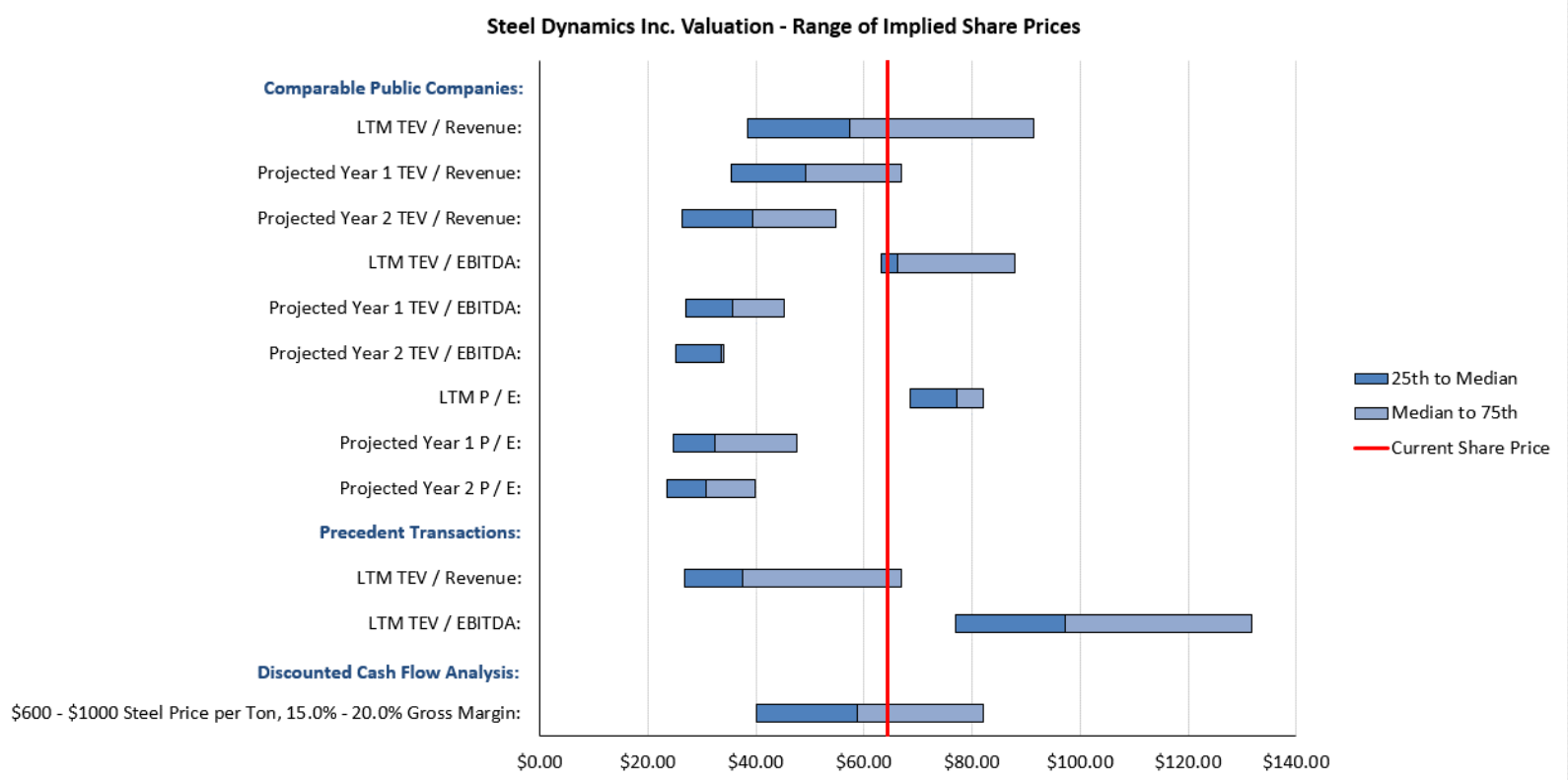
    b. The screening criteria are similar, but you also screen the Precedent Transactions by announcement date and go back only a certain number of years.

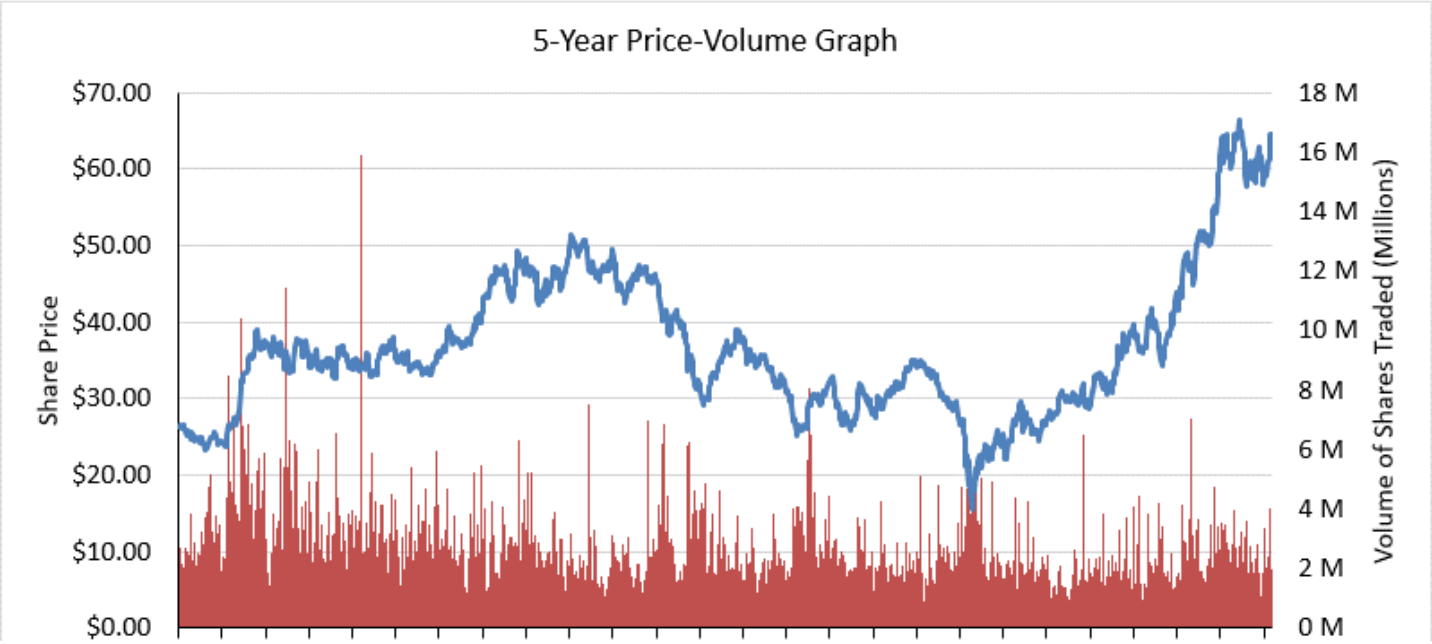
    c. The range of multiples produced by the Precedent Transactions tends to be narrower than the one produced by the Comparable Public Companies because few acquirers are willing to pay high premiums for targets.

    d. In the Precedent Transactions, you often focus on the historical multiples from the Last Twelve Months (LTM) before the transactions were announced because projections *as of the announcement date* can be difficult to find.

    e. It may be trickier to calculate the Purchase Equity Value and Purchase Enterprise Value in the Precedent Transactions because of earn-outs, contingent payments, and deals for less than 100% of other companies.

6. You have completed your valuation of this steel manufacturing company. The "football field" valuation graph and the company's 5-year price/volume chart are shown below:





Based on these graphs, what is the MOST REASONABLE valuation range for this company?

a. $60.00 – $80.00 per share.

b. $20.00 – $80.00 per share.

c. $55.00 – $65.00 per share.

d. $40.00 – $60.00 per share.