Forecasting Value: Forward Market Multiple Model[1]
Leland Manufacturing, Ltd.
In-Class Problem[2]

The subject firm for the problems represented in this case is Leland Manufacturing, Inc., a fictional firm for which hypothetical values have been presented. The Income Statement, Balance Sheet, and Other Financial Information used herein are also used in support of building a body of Corporate Finance In-Class Problems and Case Studies.

As the lead analyst in a valuation consultancy you've been tasked with assigning a value to Leland Manufacturing, Inc., a privately held contract manufacturing firm in Silicon Valley. Leland's founder is stepping down and the firm's shareholders have chosen to sell the firm to an investment group led by the firm's current Chief Operating Officer. The firm has been consistently profitable, has long-term contracts with many of the nation's largest technology firms, and enjoys strong investment banking relationships resulting in year-end-2016 debt financing of $84,000,000 (book value). 100% of Leland's common stock is held by the firm's founder and a small group of current and former senior executives. In 2009, as the high-tech industry was experiencing the worst of the effects of the 2007 financial crisis, the firm offered additional shares of common stock to its existing shareholders based on an Enterprise Value of $50,000,000 and 2009 expected EBIT of $7,000,000.

You've identified several somewhat similar firms for which the common stock is currently trading at an average of 17 times earnings. These firms do not have the length of track record Leland enjoys, nor do they have manufacturing contracts with as many notable customers, but they are publicly traded and have limited long-term debt. You've also observed a recent transactions in which a contract manufacturer in the health care industry were valued at 12.25 times EBIT.

Since the firm last offered its equity shares to investors in 2009 the firm has not taken on any additional long-term debt, but did renegotiate its debt at the end of 2018 based on a 20 year, interest only loan at 6% with semi-annual payments (the transaction funded 1/1/2019). The current yield on debt similar to that which Leland holds is 4.78% while a 2-year US Treasury note is 2.45%; equity shares in the contract manufacturing industry enjoy a risk premium of 6.55%. While your firm has no established beta, you expect the firm's market volatility to be 12% less than the average of its industry peers.

The domestic market for contract manufacturers is expecting a 5% annual growth, though Leland is a recognized leader in the space and may reasonably be expected to capture a larger portion of this than its lesser competitors. Further, you see great opportunity for the firm to expand into new markets with its innovative products and project as much as another 2% to the firm's revenues, year over year, and expect expense increases to lag those of revenues by 3%. Industry analysts see longer-term revenue growth in this space to run at no less than 8%. As is the case with many firms, you anticipate the firm's Invested Capital and Debt components to change as a function of expected revenues.

In efforts to value the firm's equity shares for those who hold its common and preferred stock, the firm establishes a per share value of its common shares based on a P/E ratio of 15.827, with preferred shares valued at 10 times the trailing 12 month preferred dividends paid. While this may not be unreasonable, stakeholders understand it may not accurately express the firm's value, accordingly, your firm has been

[1] This problem and solution set is intended to present an abbreviated discussion of the included finance concepts and is not intended to be a full or complete representation of them or the underlying foundations from which they are built.
[2] This problem set was developed by Richard Haskell, PhD (rhaskell@westminstercollege.edu), Gore School of Business, Westminster College, Salt Lake City, Utah (2017).

brought in to perform a more rigorous valuation. You should know that the tax rate on EBIT and the tax rate on taxable income are both 26%.

1. **Calculate the firm's NOPLAT, Invested Capital and ROIC for 2019.**

NOPLAT = EBIT * (1-t) = 25.19 – (1 -.26) = 18.641
IC = FA + NWC = 123.41 + (93.259 – 31.925) = 184.744
ROIC = NOPLAT/IC = 18.641/184.744 = .1009 or 10.09%

2. **What is the current market value of firm's outstanding bonds?**

Coupon	0.06
YTM (current yield)	0.0478
P/YR	2
Years	19
N	38
F	1000
C = PMT	30
Per bond value	$1,151.20
Number of bonds	84,000
Total bond value	96,701,078

3. **What is the firm's current, market-based weighted average cost of capital (WACC)?**

2016 Capital Structure	**Value**	**Weight**
Debt	96.701	33.24%
Common	191.719	65.90%
Preferred	2.500	0.86%
Total	290.92	1.00
Cost of Debt (YTM)		4.78%
Cost of Pref (Div_1/Mkt Cap $Pref_1$)	10.00%	10.00%
Cost of Equity$_{CAPM}$ ($R_E = R_F+(R_M-R_F)\beta$	16.43%	8.21%

WACC = $\left(\frac{E}{V}\ x\ R_E\right) + \left(\frac{P}{V}\ x\ R_P\right) + \left(\frac{D}{V}\ x\ R_D\right)(1 - T_C)$

= (.659 x .0821) + (0.0086 x .10) + (.3324 x .0478)(1-.26)

= 0.6748 or 6.675% (this is an exact value from Excel)

4. **What is the firm's current enterprise value (market based)?**

EV = Mkt Cap Equities + Mkt Val Debt – Cash & Equiv
= 191.719 + 2.50 + 96.701 – 7.709
= 283.211

5. **Provide a well-reasoned and detailed "top-down", 5-year revenue projection for Leland's critical operations**.
The following revenue projection includes a leadership premium that may be considered high and uses a firm expansion rate that's not representative of the data in the "story" told on the cover page of the problem set – this also differs from PHW#4 and HW#4 for the MBA 640 assignments.

Contract Mfg Industry Growth Expectations	5%
Leadership Premium	1.6%
Firm Expansion	2%
Total	8.6%

6. **Provide forecast ratios for the firm's various operating expense categories**.

FR_{COGS} = 172.56/270.180 = .6387 or 63.87%
$FR_{S\&M}$ = 29.640/270.180 = .1097 or 10.97%
FR_{ADMIN} = 38.900/270.180 = .1440 or 14.40%
FR_{DEP} = 3.89/270.180 = .0144 = 1.44%

7. **Provide a forecast schedule of NOPLAT, Invested Capital, ROIC and FCF for a sufficient number of years to support a 5-year explicit period and continuing value forecast.**

Year	Revenue	COGS	S&M Exp	Admin	Dep	EBIT	IC	NOPLAT	NWC	FA	FCF	ROIC
2019	270.180	172.560	29.640	38.900	3.890	25.190	184.744	18.641	61.33	123.410	6.297	0.1009
2020	293.415	187.400	32.189	42.245	4.225	27.356	200.632	20.244	66.609	134.023	4.356	0.1009
2021	318.649	203.517	34.957	45.879	4.588	29.709	217.886	21.985	72.337	145.549	4.730	0.1009
2022	346.053	221.019	37.964	49.824	4.982	32.264	236.625	23.875	78.558	158.066	5.137	0.1009
2023	375.814	240.027	41.228	54.109	5.411	35.039	256.974	25.929	85.314	171.660	5.579	0.1009
2024	408.134	260.669	44.774	58.762	5.876	38.052	279.074	28.158	92.651	186.423	6.059	0.1009
2025	418.337	267.186	45.894	60.231	6.023	39.003	286.051	28.862	94.967	191.084	21.886	0.1009

8. **Provide a Free Cash Flow (FCF) Model valuation using a 5-year explicit forecast period (this should be presented using a multi-columnar valuation structure).**

		FCF	
Year	FCF	$PV_{DCF(FCF)}$	Total $PV_{DCF(FCF)}$
2019	6.297		
2020	4.356	4.07	4.08
2021	4.730	4.12	8.24
2022	5.137	4.18	12.47
2023	5.579	4.24	16.78
2024	6.059	4.30	21.17
2025	21.886		

$PV_{DCF(FCF)}$	21.17
CV_{FCF}	524.23
$PV_{CV(FCF)}$	379.50
$VALUE_{FCF}$	400.67

9. **What is the firm's EV/EBIT multiple for the base year and what relevance do you suppose this might hold?**

EV/EBIT = $\frac{EV}{EBIT} = \frac{283.211}{25.19} = 11.243$

It's only immediate relevance is as a comparative performance metric, though it may be helpful in considering a potential value for the firm in the future.

10. **If this firm were to aspire to an EV/EBIT multiple reflective of the public market comps an averaged EBIT multiple of 12.25, what would you expect to the firm might need do in order to each that multiple?**

Answers here will vary, but either the EBIT and cash flow will need to have higher expected future growth rates, or the firm's discount rate might be lower, etc. … something about the firm's operating performance or its environment must be improved to warrant a higher multiple

11. Provide a FMM Model valuation using a 5-year explicit forecast period.

I've provided two estimates here: 1) using the base year EV/EBIT, and 2) using an aspirational EV/EBIT based on market comps (EV/EIT = 12.25)

	FMM ($EV_{2019}/EBIT_{2019}$)			FMM (Target = 12.25)		
	FCF	$PV_{DCF(FCF)}$	Total $PV_{DCF(FCF)}$	FCF	$PV_{DCF(FCF)}$	Total $PV_{DCF(FCF)}$
2019	6.297			6.297		
2020	4.356	4.08	4.08	4.356	4.08	4.08
2021	4.730	4.16	8.24	4.730	4.16	8.24
2022	5.137	4.23	12.47	5.137	4.23	12.47
2023	5.579	4.31	16.78	5.579	4.31	16.78
2024	6.059	4.39	21.17	6.059	4.39	21.17
2025	21.886			21.886		
		$PV_{DCF(FCF)}$	21.17		$PV_{DCF(FCF)}$	21.17
		CV_{FMM}	438.51		CV_{FMM}	477.79
		$PV_{CV(FMM)}$	317.45		$PV_{CV(FMM)}$	345.88
		$VALUE_{FMM}$	338.62		$VALUE_{FMM}$	367.05

12. Given your assessment for this firm, how else might you seek to improve the firm's value were you a potential new owner? *Give some suggestions here, allow them to impact the forecast schedule you created above, and run a valuation estimation of your choice based on the results*

I'm providing three estimates (FCF, FMM observed, FMM aspirational), but for this series I've made some adjustments to the forecasts: 1) included a BOP for sales of 2% based on expanding the firm into new markets, 2) a 3% COGS reduction due to cost efficiencies and scale economies, 3) a 3% S&M Exp reduction due to cost efficiencies related to using the same S&M teams to move additional products, and a 3% Admin reduction as new admin positions should not need to be added at the same rate as revenue increases.

Year	Rev	COGS	S & M Exp	Admin	Dep	EBIT	IC	NOPLAT	NWC	FA	FCF	ROIC
2019	270.180	172.560	29.640	38.900	3.890	25.190	184.744	18.641	61.33	123.410	6.297	0.1009
2020	298.819	185.126	31.798	41.733	4.302	35.860	204.327	26.536	67.835	136.491	6.953	0.1299
2021	330.494	204.749	35.169	46.156	4.758	39.661	225.986	29.349	75.026	150.960	7.690	0.1299
2022	365.526	226.453	38.897	51.049	5.263	43.865	249.940	32.460	82.979	166.961	8.506	0.1299
2023	404.272	250.457	43.020	56.460	5.821	48.515	276.434	35.901	91.774	184.659	9.407	0.1299
2024	447.125	277.005	47.580	62.445	6.438	53.657	305.736	39.706	101.503	204.233	10.404	0.1299
2025	458.303	283.930	48.770	64.006	6.599	54.999	313.379	40.699	104.040	209.339	33.056	0.1299

FCF			FMM ($EV_{2019}/EBIT_{2019}$)			FMM (Target = 12.25)		
FCF	$PV_{DCF(FCF)}$	Total $PV_{DCF(FCF)}$	FCF	$PV_{DCF(FCF)}$	Total $PV_{DCF(FCF)}$	FCF	$PV_{DCF(FCF)}$	Total $PV_{DCF(FCF)}$
6.297			6.297			6.297		
6.953	6.52	6.52	6.953	6.52	6.52	6.953	6.52	6.52
7.690	6.76	13.28	7.690	6.76	13.28	7.690	6.76	13.28
8.506	7.01	20.28	8.506	7.01	20.28	8.506	7.01	20.28
9.407	7.26	27.55	9.407	7.26	27.55	9.407	7.26	27.55
10.404	7.53	35.08	10.404	7.53	35.08	10.404	7.53	35.08
33.056			33.056			33.056		

	$PV_{DCF(FCF)}$	35.08		$PV_{DCF(FCF)}$	35.08		$PV_{DCF(FCF)}$	35.08
	CV_{FCF}	791.79		CV_{FMM}	618.35		CV_{FMM}	673.73
	$PV_{CV(FCF)}$	573.19		$PV_{CV(FMM)}$	447.64		$PV_{CV(FMM)}$	487.73
	$VALUE_{FCF}$	608.27		$VALUE_{FMM}$	482.72		$VALUE_{FMM}$	522.81

Leland Manufacturing, Ltd.
Balance Sheet (millions)
Year Ending December 31

	2018	2019		2018	2019
Current Assets			Current Liabilitites		
Cash & Securities	9.780	7.709	Accounts Payable	13.360	9.805
Accounts Receivable	37.470	38.910	Other	23.430	22.120
Inventory	47.700	46.640	Total	36.790	31.925
Total	94.950	93.259			
			Long Term Debt		
Fixed Assets			Mortgages	0.320	-
PPE	95.480	102.330	Bonds	83.680	84.000
Subsidiary	18.760	21.080	Total	84.000	84.000
Total	114.240	123.410	Owner's Equity		
			Common Stock	5.440	5.570
			Preferred Stock	1.800	1.900
			Accumulated Retained Earnings	81.160	93.274
			Total	88.400	100.744
Total Assets	209.190	216.669	Total Liabilities and Owner's Equity	209.190	216.669

Additional Financial Information

Preferred Shares	**2018**	**2019**	**Common Shares**	**2018**	**2019**
Shares Outstanding (millions)	0.900	0.950	Shares Outstanding (millions)	5.440	5.570
12/31 Price per Share	2.556	2.632	12/31 Price per Share	28.965	34.420
Price/Dividend Multiple	10.000	10.000	P/E Multiple	15.827	15.827
Market Value (millions)	2.300	2.500	EPS	1.830	2.175
			Market Value (millions)	157.570	191.719

Leland Manufacturing, Ltd.
Income Statement (millions)
January 1 - December 31

	2018	2019
Income		
Product Sales	234.980	252.780
Services	11.520	16.540
Subsidiary	0.550	0.860
Total Income	247.050	270.180
Expenses		
COGS	161.290	172.560
Sales & Marketing	23.500	29.640
Administration	35.400	38.900
Depreciation	3.640	3.890
Total Expenses	223.830	244.990
Operating Income (EBIT)	23.220	25.190
Interest Paid		
General Interest	6.120	5.040
Total Interest Paid	6.120	5.040
Taxable Income	17.100	20.150
Taxes Paid	5.554	6.373
Net Income	11.546	13.777
Distribution of Earnings		
Dividends (Common)	1.360	1.413
Dividends (Preferred)	0.230	0.250
Addition to Retained Earnings	9.956	12.114