

Forecasting ROIC: Organic Growth¹ In-Class Problem²

The subject firm in this problem set is Leshkal Industries, 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 other In-Class Problems in support of building a body of Corporate Finance In-Class Problems. This In-Class Problem relies on values calculated in Reorganizing Financial Statements: NOPLAT, IC, and FCF³

As a hedge fund manager interested in securing a major stake in domestic manufacturing firms with exposure to renewable energies, you've become interested in Leshkal Industries, Inc.⁴, a leader in energy storage and renewable energy integration. You've studied the firm and its financial statements and now want to forecast future revenues and expenses to determine how interested you are in recommending a significant investment in this firm by your fund.

To help focus your analysis, you've chosen to use a top/down revenue forecast and the Forecast Ratio method to forecast Labor Expenses, Non-Labor COGS, Sales and Administrative Expenses (S&A), Depreciation, Interest Expense. Your forecast of Invested Capital is based on your expectation of necessary capital infusions. You've decided to keep the firm's debt to equity capital ratio constant and are using the firm's invested capital as a proxy for the firm's equity capital component⁵.

From your reorganized financial statements, focused on isolating operational values for 2014 only, you've calculated that NOPLAT, Invested Capital, Free Cash Flow and ROIC are \$436, \$3,059, 253, and 14.25%, respectively. You've also noted that new debt capital can be acquired in the market for 7%, GDP is projected to advance by 4% over the coming year, and corporate income tax rates for the firm are expected to remain constant at 34%. You've noted that the firm's invested capital for 2013, based on the operations you might be interested in was \$3025. WACC is estimated at 12%.

Market Analysts in your firm have prepared an analysis for Leshkal and noted the following:

- Industry projections of a 4% increase in expected demand for Leshkal's product and services over the next ten years.
- As an existing leader in the field, Leshkal is positioned to capture 25-50% more of the demand growth than other competitors.
- Repositioning some of the firm's non-operating assets would allow for an expansion of the firm's sales and marketing efforts sufficient to increase sales by 5%. Recall that the firm holds patents on products it no longer manufactures or sells.
- A survey of the firm's major clients found most would be interested in seeing the firm offer complementing products and services.

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 (2015).

³ *Reorganizing Financial Statements: NOPLAT, IC, and FCF* is available through the following URL:

[www.richardhaskell.net/resources/Reorganizing+Fin+Stmnt+--+NOPLAT\\$2C+IC\\$2C+FCF+--+solution.pdf](http://www.richardhaskell.net/resources/Reorganizing+Fin+Stmnt+--+NOPLAT$2C+IC$2C+FCF+--+solution.pdf)

⁴ Leshkal Industries, Inc. is a purely fictionalized firm. Any similarity to an actual firm is simply coincidental and unintended. The values presented are likewise completely hypothetical and are not intended to represent values for any actual firm or operation.

⁵ Unless you're willing to forecast the firm's equity capital needs, you'll likely want to use changes in the firm's IC as a proxy for changes in equity and you'll have to consider how to calculate possible changes in IC.

1. When broken into its component parts $ROIC = \text{Profit Margin (PM)} \times \text{Capital Efficiency (CapE)}$. What are the values for $ROIC_{2014}$ and its component parts? Be sure to reconcile this figure with ROIC based on NOPLAT and Invested Capital.

$$EBIT_{Ops} = (\text{Total Income} - (\text{Royalties} + \text{Rent})) - \text{Total Expenses} = (2311 - (20 + 10)) - 1620 = 661$$

$$NOPLAT = EBIT * (1 - T_M) = 661 * (1 - .34) = 436.26$$

$$\text{Revenue}_{Ops} = \text{Total Income} - (\text{Royalties} + \text{Rent}) = 2311 - (20 + 10) = 2281$$

$$PM = \frac{NOPLAT}{\text{Revenue}_{Ops}} = \frac{436.26}{2281} = 0.1911$$

$$\text{Invested Capital} = FA_{Ops} + NWC = 2695 + (708 - 344) = 3059$$

$$CapE = \frac{\text{Revenue}_{Ops}}{\text{Invested Capital}} = \frac{2281}{3059} = .7457$$

$$ROIC = PM \times \text{Capital Efficiency}$$

$$= \frac{NOPLAT}{\text{Revenues}} \times \frac{\text{Revenues}}{\text{Invested Capital}}$$

$$= \frac{436}{2281} \times \frac{2281}{3059} = .1911 \times .7457$$

$$= .1425 \text{ or } 14.25\% - \text{the same figure as obtained via a traditional method}$$

2. Given the ROIC you've calculated, what would you do with the firm's non-operating assets and how would you expect this to effect the firm in the long run. You're going to have to make a recommendation here and back it up with some relevant figures. *Hint: this might be an issue of the firm's ROIC compared to the return the firm receives on these non-operating assets, and some thought of the book value of these assets compared to a calculable market.*

Leshkal's Patents Held and Rental Property generated \$30 in 2014 against a book value of \$185 for a return on book value of 16.22%, which might be considered as ROIC for these assets. In a market in which debt capital can be acquired by others for 7%, this would suggest the market value of these assets may be substantially higher than the book value. One caveat to this may be the long-term relevance of the patents, as the technological advances of others may render the patents obsolete in coming years, so maybe a reduction in expected return of 25% might be appropriate, leaving us with an adjusted return on these assets of approximately 12%.

If we apply a modified version of the Key Driver model of continuing value to these assets, one in which we take the expected income from these assets over the next year as a function of the increase in income over the last year, we think of expected GDP changes as some form of market g , and the cost of debt capital as some proxy for WACC, we come up with the following value:

$$\text{Value}_t = \frac{\text{Income}_{t+1} \left[1 - \frac{g}{\text{ROIC}} \right]}{\text{WACC} - g} = \frac{31 \times \left[1 - \frac{0.04}{0.12} \right]}{0.07 - 0.04} = 688.89$$

Selling these assets may result in a long-term capital gain such that the after tax benefit to the firm is equal to Book Value + (Capital Gain)(1-tax rate) = 185 + (688.89-185)(1-.34) = 516.98.

With ROIC of 14.25 and WACC running at 12%, it might appear to make sense to decrease the firm's debt by this amount (\$516.98). This will change the D/E ratio, which we've assumed is remaining constant, but will it change NOPLAT or ROIC?

- NOPLAT: NOPLAT doesn't include the effects of interest expense except as they relate to the tax shield. If decreasing debt reduces the tax shield it's possible NOPLAT will decrease, but absent that assumption, it will not!
- ROIC: the sale of the non-operating assets in and of itself doesn't necessarily change Invested Capital, and if it doesn't change NOPLAT, then the effect on ROIC is neutral! Which is one of Modigliani and Miller's Theorem's.

So it looks like liquidating the asset is only really valuable if it increases sales. So let's assume we use the cash freed up from the sale of the asset to increase sales by 5%, as indicated by the marketing analysis. That projected increase might be conservative, but that's safer than being too aggressive.

- 3. Given the Market Analysis data at your disposal and based on the assumption that Leshkal's management agrees with your recommendation, with respect to the non-operating assets, what would be your revenue forecast for the firm over the next ten years? Be very specific here. The revenue forecast is possibly the most important forecast function in any firm's future planning.**

So... this is where some form of WAG comes into play, hopefully supported by some experience and successful intuition.

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|---|------------|
| • Industry growth expectations | 4% |
| • Leshkal's industry leadership premium (25%) | 1% |
| • Repositioning non-operating assets | 5% |
| • Distribution of other products/services | <u>5%</u> |
| • Projected Revenue Increase | <u>15%</u> |
| • Adjustment (Conservative) ¹ | -5% |
| • Adjusted Revenue Increase | 10% |

Revenue Forecast based on Adjusted Revenue Increase

Year	Revenue	
2014	2281	Explicit period year 0
2015	2509	
2016	2760	
2017	3036	
2018	3340	
2019	3674	
2020	4041	
2021	4445	
2022	4890	
2023	5378	
2024	5916	Explicit period year 10, CV period year 0
2025	6508	

4. What are the Forecast Ratios (FR_i) for Revenue and Labor, Non-Labor COGS, S&A, Depreciation and Interest Expenses?

$$FR_{\text{Revenue}} = 10\% \text{ (stated)}$$

$$FR_{\text{Labor}} = \frac{\text{Labor}_t}{\text{Revenue}_t} = \frac{589}{2281} = .2582 \text{ or } 25.82\%$$

$$FR_{\text{NoN-Labor COGS}} = \frac{\text{Non-Labor COGS}_t}{\text{Revenue}_t} = \frac{218}{2281} = .0956 \text{ or } 9.56\%$$

$$FR_{\text{S\&A}} = \frac{\text{S\&A}_t}{\text{Revenue}_t} = \frac{537}{2281} = .2354 \text{ or } 23.54\%$$

$$FR_{\text{Depreciation}} = \frac{\text{Depreciation}_t}{\text{Revenue}_t} = \frac{276}{2281} = .1210 \text{ or } 12.10\%$$

$$FR_{\text{Interest}} = \frac{\text{Interest}_t}{\text{Debt}_{t-1}} = \frac{141}{762} = .1850 \text{ or } 18.50\%$$

5. Based on forecast ratio methods and assuming operating revenue growth forecast at 10% per annum, what are the projected levels of Leshkal's NOPLAT, Invested Capital and ROIC from 2015 through 2024? Be thorough here and include the following: Revenues, Labor Expense, Non-Labor COGS, S&A Expense, Depreciation, Interest Expense, Invested Capital, NOPLAT and ROIC

	Year	Debt	Revenue	Labor Expense	Non-Labor COGS	S & A Expense	Dep	Interest Expense	Invested Capital	NOPLAT	ROIC
0	2014	653.00	2,281.00	589.00	218.00	537.00	276.00	141.00	3,059.00	436.26	0.1426
1	2015	718.30	2,509.10	647.90	239.80	590.70	303.60	120.83	3,364.90	479.89	0.1426
2	2016	790.13	2,760.01	712.69	263.78	649.77	333.96	132.91	3,701.39	527.87	0.1426
3	2017	869.14	3,036.01	783.96	290.16	714.75	367.36	146.21	4,071.53	580.66	0.1426
4	2018	956.06	3,339.61	862.35	319.17	786.22	404.09	160.83	4,478.68	638.73	0.1426
5	2019	1,051.66	3,673.57	948.59	351.09	864.84	444.50	176.91	4,926.55	702.60	0.1426
6	2020	1,156.83	4,040.93	1,043.45	386.20	951.33	488.95	194.60	5,419.21	772.86	0.1426
7	2021	1,272.51	4,445.02	1,147.79	424.82	1,046.46	537.85	214.06	5,961.13	850.15	0.1426
8	2022	1,399.76	4,889.53	1,262.57	467.30	1,151.11	591.63	235.46	6,557.24	935.16	0.1426
9	2023	1,539.74	5,378.48	1,388.83	514.03	1,266.22	650.79	259.01	7,212.96	1,028.68	0.1426
10	2024	1,693.71	5,916.33	1,527.71	565.44	1,392.84	715.87	284.91	7,934.26	1,131.55	0.1426
CONT	2025	1,863.09	6,507.96	1,680.49	621.98	1,532.12	787.46	313.40	8,727.68	1,244.70	0.1426

6. Given the values you calculated for item #5 (above), what would you have to say with respect to the robustness and consistency of the firm's ROIC over time?

Leshkal Industries, Inc.					
Balance Sheet (\$ thousands)					
Year Ending December 31					
	2013	2014		2013	2014
Current Assets			Current Liabilities		
Cash & Securities	84	98	Accounts Payable	312	344
Accounts Receivable	165	188	Total	312	344
Inventory	393	422			
Total	642	708			
			Long Term Debt		
Fixed Assets			Mortgages	200	177
			Bonds	331	280
Buildings	1,579	1,668	Credit Line (long-term)	231	196
Equipment	819	864	Total	762	653
Technology	148	163			
Total	2,546	2,695	Owner's Equity		
			Common Stock	500	550
Other Assets			Preferred Stock	-	-
Patents Held	125	125	Accumulated Retained Earnings	1,799	2,041
Rental Property	60	60	Total	2,299	2,591
Total Assets	3,373	3,588	Total Liabilities and Owner's Equity	3,373	3,588

Leshkal Industries, Inc.			
Income Statement (\$ thousands)			
January 1 - December 31			
	2013	2014	
Income			
Product Sales	1452	1,664	
Services	568	617	
Royalties	20	20	
Rent (net)	9	10	
Total Income	2,049	2,311	
Expenses			
Labor (COGS)	523	589	
Non-labor (COGS)	193	218	
Sales & Marketing	240	270	
Administration	236	267	
Depreciation	242	276	
Total Expenses	1,434	1,620	
Interest Paid		--	
General Interest	107	109	
Bond Interest	43	32	
Total Interest Paid	150	141	
Taxable Income	465	550	
Tax (34%)	158	187	
Net Income	307	363	
Distribution of Earnings			
Dividends (Common)	95.6	121	
Addition to Retained Earnings	211	242	

Additional Financial Information							
	2009	2010	2011	2012	2013	2014	
Stock Value ¹							
Shares Outstanding (thousands)	500	500	500	500	500	550	
12/31 Price per Share	1.00	1.80	7.48	12.60	13.51	15.84	
P/E Multiple	NA	60	34	28	22	24	
EPS	--	0.03	0.22	0.45	0.614	0.66	
Market Cap (\$ thousands)		900	3,740	6,300	6754	8712	
Dividends Paid	0	0.00	0.00	0.15	0.191	0.218	
Book Value / Liabilities	NA	NA	NA	NA	562	476	

¹ Firm incorporated in 2009 with 500,000 shares each issued at \$1.00 per share