THIRD EDITION

CASES IN FINANCE

Jim DeMello

Mc Graw Hill Education

Cases in Finance

Third Edition

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Western Michigan University

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1

Financial Statements, Cash Flows and Taxes

Ultra Cable Corporation

The Ultra Cable Corporation, headquartered in Chicago, Illinois, had thus far enjoyed a fairly steady run-up in revenues and profits. Two years ago, it hired Ron Swenson away from the competition to assist the president, Tom Gray, in navigating the company through what seemed like a fairly strong growth phase at the time. With the economy looking pretty strong, and the growth prospects very favorable, the company had expanded its service facilities to a number of new markets. Recently, however, competition had become fiercer, and profit margins had started to shrink. What worried Ron the most was that the firm's stock price had declined precipitously from $35 per share to its current level of $25. Moreover, the company's cash balance had dropped from $100,000 last year to just $12,500.

With the firm's annual meeting only a few weeks away, Ron knew that the firm's shareholders would be bombarding the president with many questions about the recent drop in the firm's share price and cash balance and would demand some explanations. Tom would be hard-pressed to come up with feasible responses and suggestions regarding how the firm would be gearing itself to alleviate its liquidity problems.

Ron knew that the firm's management had planned on raising some short-term debt fairly soon to fund its working capital. Therefore, he expected that it would not be long before his boss, Tom, would come knocking on his door asking him that million-dollar question: "Where have all the dollars gone?" Later that day his phone rang, and just as he had feared Tom asked Ron to

prepare a report explaining in detail the reasons for the company's current financial condition. Ron immediately booted up his laptop and downloaded the firm's balance sheet and income statements for the recent two years, as shown in Tables 1 and 2.

Table 1

Income Statement

	Current Year	Last Year
Net Sales	5,125,000	4,197,235
Cost of Goods Sold	3,843,750	3,357,788
Depreciation	197,500	127,500
Selling & Administrative Expenses	100,000	82,363
Earnings Before Interest and Taxes	983,750	629,585
Interest Paid	387,500	110,000
Taxable Income	596,250	519,585
Taxes (40%)	238,500	207,834
Net Income	357,750	311,751
Dividends	107,325	93,525
Addition to Retained Earnings	250,425	218,226

Table 2

Balance Sheet

	Current Year	Last Year
ASSETS		
Cash	12,500	100,000
Accounts Receivable	1,350,000	500,000
Inventories	3,251,125	1,625,000
Total Current Assets	4,613,625	2,225,000
Gross Fixed Assets	3,250,000	1,275,000
Accumulated Depreciation	580,000	382,500
Net Fixed Assets	2,670,000	892,500
Total Assets	7,283,625	3,117,500
LIABILITIES & EQUITY		
Accounts Payable	362,500	137,500
Notes Payable	1,875,000	750,000
Total Current Liabilities	2,237,500	887,500
Long-Term Debt	3,065,700	500,000
Common Stock and Paid in Surplus (200,000 shares outstanding)	1,500,000	1,500,000
Retained Earnings	480,425	230,000
Total	7,283,625	3,117,500

Questions:

1. Using a cash flow statement, explain why Ultra Cable Corporation's cash balance has declined so precipitously this past year.

2. Why has Ultra Cable's stock price dropped so much recently, despite an increase in its revenues and its earnings per share?

3. Evaluate the firm's absolute and relative liquidity positions, and compare them with its liquidity position last year.

4. Compare the firm's market value with its book value. Is the book value a good representation of the firm's true condition? Explain your answer.

5. For the current year, calculate Ultra Cable's cash flow to investors (CFI) measure using its accounting statements. What can be garnered about Ultra Cable's performance from this measure?

6. Using the firm's net working capital calculation for the recent two years, what can you conclude about Ultra Cable's liquidity situation?

7. Should the shareholders be concerned regarding the firm's declining cash balance, or should they be pleased with the firm's rising earnings per share? Please explain your answer.

2

Analyzing Financial Statements

Are We Getting Too Big for Our Boots?

Andy Gillian, the owner of Gillian Pool & Spa Supplies, paced up and down the balcony of his luxurious Victorian home, overlooking a beautiful backyard, which housed a full-size pool/spa and a sprawling, luscious, green lawn. What was worrying Andy was the fact that over the past two years, his firm's net income figures had been negative, and his cash flow situation had become pretty weak (See Tables 1 and 2). He figured that he had better take a good look at his firm's financial situation and improve it, if possible, before his bankers found out. He knew full well that being shut out by his bankers would be disastrous.

Andy had learned everything he knew about the pool and spa business by working several summers during his high school and college years for a pool construction firm. After graduating with a degree in marketing, 10 years ago, he started his own pool service/supply business and operated it out of his well-stocked delivery truck. Andy, being a very persuasive young man, was able to secure several service contracts from local residents, and with business booming, he opened up his first retail store eight years ago in a reasonably low-cost facility. His revenues rolled in at a fairly healthy pace, and earnings grew as well.

Then, five years ago, motivated by the increasing demand for pool/spa products and leisure activities, Andy moved into a much larger facility, located in a newly developed shopping complex. He was always interested in owning an upscale store, so he took on a mortgage and designed an

exceedingly well-planned pool and spa supply store. Andy began offering fairly liberal credit terms to drum up more business and significantly broadened his inventory.

However, having used most of his available funds in expanding the business, Andy was well aware that future growth would have to be funded with external sources of funds. Although a business school graduate, Andy had never taken his finance and accounting courses seriously and had barely managed to scrape by. As a result–not unlike many small business owners–his ability to decipher financial statements was very limited. He had often entertained the thought of taking financial management courses, but could never find the time. Then, the other day, at his downtown small-business association meeting, he mentioned his problem to Vic Sharma, his long-time friend and owner of an auto-parts store. Vic had often given him good advice in the past, and Andy was desperate for a solution. "I'm no finance expert, Andy," said Vic, "but you might want to contact the finance department at our local university's business school and see if you can hire an MBA student as an intern. I have been very fortunate to have hired some good interns from them over the years, you know."

That's exactly what Andy did. Within a week he recruited Denny Kent, a second-semester MBA student who had an undergraduate degree in accountancy and was interested in concentrating in finance. When Denny started his internship, Andy explained his concerns. "I'm going to have to raise funds for future growth, and given my recent profit situation, the prospects look pretty bleak. I can't seem to put my finger on the exact cause. The bank's commercial loan committee is going to want some pretty convincing arguments as to why they should grant me the loan. I need to put some concrete remedial measures in place, and was hoping that you can help sort things out, Denny. I think we may be getting too big for our boots!"

Table 1

Gillian Pool & Spa Supplies
Balance Sheet

	2011	2012	2013	2014	2015
ASSETS					
Cash and Marketable Securities	$155,000	$309,099	$75,948	$28,826	$18,425
Accounts Receivable	10,000	12,000	20,000	77,653	90,078
Inventory	250,000	270,000	500,000	520,000	560,000
Current Assets	$415,000	$591,099	$595,948	$626,480	$668,503
Land, Buildings, Plant, and Equipment	$250,000	$250,000	$500,000	$500,000	$500,000
Accumulated Depreciation	−25,000	−50,000	−100,000	−150,000	−200,000
Net Fixed Assets	$225,000	$200,000	$400,000	$350,000	$300,000
Total Assets	$640,000	$791,099	$995,948	$976,480	$968,503
LIABILITIES AND EQUITIES					
Short-Term Bank Loans	$50,000	$145,000	$140,000	$148,000	$148,000
Accounts Payable	10,000	10,506	19,998	15,995	16,795
Accruals	5,000	5,100	7,331	9,301	11,626
Current Liabilities	$65,000	$160,606	$167,329	$173,296	$176,421
Long-Term Bank Loans	$63,366	$98,000	$196,000	$190,000	$183,000
Mortgage	175,000	173,000	271,000	268,000	264,000
Long-Term Debt	$238,366	$271,000	$467,000	$458,000	$447,000
Total Liabilities	$303,366	$431,606	$634,329	$631,296	$623,421
Common Stock (100,000 shares)	$320,000	$320,000	$320,000	$320,000	$320,000
Retained Earnings	16,634	39,493	41,619	25,184	25,082
Total Equity	$336,634	$359,493	$361,619	$345,184	$345,082
Total Liabilities and Equity	$640,000	$791,099	$995,948	$976,480	$968,503

Table 2

Gillian Pool & Spa Supplies
Income Statements

	2011	2012	2013	2014	2015
Net Sales	$900,000	$982,500	$1,170,000	$1,310,400	$1,520,064
Cost of Goods Sold	729,000	801,900	962,280	1,100,736	1,305,000
Gross Profit	$171,000	$180,600	$207,720	$209,664	$215,064
Admin and Selling Exp	$45,000	$58,950	$64,350	$72,072	$91,204
Depreciation	37,500	40,000	50,000	50,000	50,000
Miscellaneous Expenses	3,041	3,557	4,680	14,414	22,801
Total Operating Exp	$85,541	$102,507	$119,030	$136,486	$164,005
EBIT	$85,460	$78,093	$88,690	$73,178	$51,059
Interest on ST Loans	$9,600	$9,600	$9,600	$17,760	$17,760
Interest on LT Loans	5,400	5,400	5,400	13,500	16,470
Interest on Mortgage	16,000	13,840	12,240	21,440	21,120
Total Interest	$31,000	$28,840	$27,240	$52,700	$55,350
Before-Tax Earnings	$54,460	$49,253	$61,450	$20,478	($4,291)
Taxes	21,784	19,701	24,580	8,191	–1,716
Net Income	$32,676	$29,552	$36,870	$12,287	($2,574)
Dividends on Stock	0	0	0	0	0
Additions to Retained Earnings	$32,676	$29,552	$36,870	$12,287	($2,574)

Questions:

1. Calculate Gillian Pool and Spa Supplies' average annual compound growth rate of sales, and analyze its earnings performance for the past five years.

2. In order to shed some light on the firm's financial condition, which statements should Denny analyze, and which measures/calculations should he use to compile a detailed report? Please explain why.

3. Realizing that comparison with an appropriate benchmark is a key component of comprehensive ratio analysis, how should Denny go about finding a suitable benchmark?

4. While attending his MBA finance class, Denny had learned that doing a common size analysis and a DuPont analysis are very useful first steps when analyzing a company's health. Using the five-year financial statements, help Denny perform such analyses. Comment on the findings.

5. Analyze Gillian Pool's liquidity, asset utilization, long-term solvency, and profitability ratios. What arguments would have to be made to convince the bank that it should grant Gillian Pool & Spa Supplies the loan?

6. If you were the commercial loan officer Andy approached for a short-term loan of $50,000, what would your decision be? Why?

7. What recommendations should Denny make to Andy for improvement, if any?

8. What kinds of problems do you think Denny would have to cope with when conducting a comprehensive financial statement analysis of Gillian Pool & Spa Supplies? What are the limitations of financial statement analysis in general?

3

DuPont Analysis

Playing the Numbers Game

"Numbers! I need to see numbers!" exclaimed Marcus in response to comments made by the assistant vice-president of Finance, Jeff Smith. Marcus Lenovo, president and chief executive officer of Duralex Inc., had been instrumental in significantly increasing the company's size during his first five years in office. He spearheaded some successful marketing campaigns and revamped the production facilities by adopting the latest technology in injection molding. He also implemented various cost-cutting measures and introduced performance plans to boost efficiency. Foremen and supervisors were offered stock option incentives, and bonuses were tied to earnings per share (EPS) growth.

Duralex Inc., a medium-sized plastic molding company, was founded in 2008 and was located in Midland, Michigan. The company supplied molded plastic products to various processing industries as well as end-users. It enjoyed a fairly diversified base of customers, ranging from automobile and home products manufacturers to the federal government. After an initial period of sluggish growth, the firm's revenues and profits had almost quadrupled. Most of the increase had been achieved under Lenovo's leadership. The plastics business offered potential for high profit margins, and as a result it attracted many competitors. Despite the fierce competition, Duralex's stock, which traded in the over-the-counter market, had tripled in value over the past five years, making the shareholders very happy.

Recently, however, the stock price had dipped sharply, raising concerns among security analysts. Jeff Smith, the assistant VP of finance, brought this matter to Marcus's attention informing him that the analysts had given their closest rival, APEX Molding, a "strong buy" rating while downgrading Duralex's rating to a "Hold." This recent development had outraged shareholders, and the personal relations department had been overwhelmed with calls from anxious owners wanting to know what was going on.

Marcus, a motivated leader, was not about to give up easily, however. His track record of turning companies around was very good. He knew that if he could identify the main problem areas, he would be able to make some strategic moves to alleviate the problems. He therefore demanded that he be given a detailed report of the firm's financial condition in comparison to that of APEX Molding. Marcus had learned over the years that in order to be successful, it was very important to "play the numbers game."

Table 1

Duralex Incorporated

Annual Balance Sheets (Values in Millions)

	2015	2014	2013	2012
ASSETS				
Current Assets				
Cash and Marketable Securities	3.2	4.8	5.0	0.6
Accounts Receivable	46.1	59.6	50.1	20.9
Inventory	27.4	24.1	25.3	12.8
Other Current Assets	4.1	7.6	6.9	0.4
Total Current Assets	80.8	96.1	87.3	34.7
Non-Current Assets				
Property, Plant & Equipment, Gross	94.2	98.7	87.9	47.7
Accumulated Depreciation & Depletion	38.3	31.4	27.7	19.3
Property, Plant & Equipment, Net	55.9	67.3	60.2	28.4
Intangibles	121.4	172.2	182.0	32.8
Other Non-Current Assets	7.7	8.3	10.5	3.5
Total Non-Current Assets	185.0	247.8	252.7	64.7
Total Assets	**265.8**	**343.9**	**340.0**	**99.4**
LIABILITIES AND EQUITIES				
Current Liabilities				
Accounts Payable	20.5	23.8	20.5	9.7
Short-Term Debt	6.6	5.6	3.5	3.9
Other Current Liabilities	35.0	33.7	35.7	12.9
Total Current Liabilities	62.1	63.1	59.7	26.5
Non-Current Liabilities				
Long-Term Debt	215.2	221.3	222.3	30.7
Deferred Income Taxes	0.0	0.0	0.0	0.0
Other Non-Current Liabilities	3.0	2.9	0	0
Minority Interest	0.0	0.0	0.0	0.0
Total Non-Current Liabilities	218.2	224.2	222.3	30.7
Total Liabilities	**280.3**	**287.3**	**282.0**	**57.2**
Shareholder's Equity				
Preferred Stock Equity	0.0	0.0	0.0	0.0
Common Stock Equity	−14.5	56.6	58.0	42.2
Total Equity	−14.5	56.6	58.0	42.2
Total liabilities and Stock Equity	**265.8**	**343.9**	**340.0**	**99.4**
Total Common Shares Outstanding	7.7 Mil	7.2 Mil	7.6 Mil	6.6Mil
Preferred Shares	0.0	0.0	0.0	0.0
Treasury Shares	0.0	0.0	0.0	0.0

Table 2

APEX Molding

Annual Balance Sheets (Values in Millions)

	2015	2014	2013	2012
ASSETS				
Current Assets				
Cash and Marketable Securities	0.3	1.1	0.3	2.9
Accounts Receivable	17.9	16.1	13.0	7.0
Inventory	12.9	11.7	9.4	3.9
Other Current Assets	1.7	1.3	1.4	1.7
Total Current Assets	32.8	30.2	24.1	15.5
Non-Current Assets				
Property, Plant & Equipment, Gross	42.6	36.9	27.8	20.3
Accumulated Depreciation & Depletion	15.5	11.1	7.1	3.9
Property, Plant & Equipment, Net	27.1	25.8	20.7	16.4
Intangibles	30.0	31.1	18.2	1.9
Other Non-Current Assets	0.2	0.6	1.0	2.2
Total Non-Current Assets	57.3	57.5	39.9	20.5
Total Assets	**90.1**	**87.7**	**64.0**	**36.0**
LIABILITIES AND EQUITIES				
Current Liabilities				
Accounts Payable	6.9	7.1	5.3	2.0
Short-Term Debt	6.7	5.8	2.7	2.7
Other Current Liabilities	6.5	7.1	5.3	2.7
Total Current Liabilities	20.1	19.9	13.2	7.4
Non-Current Liabilities				
Long-Term Debt	25.8	28.0	18.7	5.4
Deferred Income Taxes	0.1	0.5	0.0	1.4
Other Non-Current Liabilities	3.0	3.9	3.9	0.8
Minority Interest	0.0	0.0	0.0	0.0
Total Non-Current Liabilities	28.9	32.4	22.6	7.6
Total Liabilities	**49.0**	**52.3**	**35.8**	**15.0**
Shareholder's Equity				
Preferred Stock Equity	0.0	0.0	0.0	0.0
Common Stock Equity	41.1	35.4	28.1	21.0
Total Equity	41.1	35.4	28.1	21.0
Total Liabilities and Stock Equity	**90.1**	**87.7**	**64.0**	**36.0**
Total Common Shares Outstanding	4.3 mil	4.3 mil	4.3 mil	4.1 mil
Preferred Shares	0.0	0.0	0.0	0.0
Treasury Shares	0.0	0.0	0.0	0.0

Table 3

Duralex Incorporated

Annual Income Statements (Value in Millions)

	2015	2014	2013	2012
Sales	297.0	294.0	252.4	129.3
Cost of Sales	222.2	184.5	160.0	84.1
Gross Operating Profit	74.8	109.5	92.4	45.2
Selling, General & Admin. Expenses	39.4	54.5	47.1	26.8
EBITDA	35.4	55.0	45.3	18.4
Depreciation & Amortization	18.3	16.2	14.7	5.7
EBIT	17.1	38.8	30.6	12.7
Other Income, Net	−0.5	0.6	0.3	0.1
Total Income Avail for Interest Exp.	−49.2	24.4	30.9	12.8
Interest Expense	22.4	20.3	15.6	5.2
Minority Interest	0.0	0.0	0.0	0.0
Pre-Tax Income	−71.6	4.1	15.3	7.6
Income Taxes	0.1	2.1	6.6	0.3
Special Income/Charges	−65.8	−15.0	0.0	0.0
Net Income from Cont.Operations	−71.5	2.0	8.8	7.3
Net Income from Discont. Opers.	0.0	0.0	0.0	0.0
Net Income from Total Operations	−71.5	2.0	8.8	7.3
Normalized Income	−5.7	17.0	8.8	7.3
Extraordinary Income	0.0	0.0	0.0	0.0
Income from Cum. Eff. of Acct. Chg.	0.0	0.0	0.0	0.0
Income from Tax Loss Carryforward	0.0	0.0	0.0	0.0
Other Gains	0.0	0.0	−5.1	0.0
Total Net Income	**−71.5**	**2.0**	**3.7**	**7.3**

Table 4

APEX Molding

Annual Income Statements (Value in Millions)

	2015	2014	2013	2012
Sales	123.6	106.7	85.7	43.2
Cost of Sales	82.6	69.2	55.5	27.2
Gross Operating Profit	41.0	37.5	30.2	16.0
Selling, General & Admin. Expenses	21.3	19.9	16.8	9.6
EBITDA	19.7	17.6	13.4	6.4
Depreciation & Amortization	5.7	4.7	3.7	2.1
EBIT	14.0	12.9	9.7	4.3
Other Income, Net	0.0	0.0	–0.1	–0.1
Total Income Avail for Interest Exp.	14.0	12.9	9.6	4.2
Interest Expense	3.0	2.3	1.8	0.5
Minority Interest	0.0	0.0	0.0	0.0
Pre-Tax Income	11.0	10.6	7.8	3.7
Income Taxes	3.7	4.0	3.2	1.5
Special Income/Charges	0.0	0.0	0.0	0.0
Net Income from Cont.Operations	7.3	6.6	4.6	2.3
Net Income from Discont. Opers.	0.0	0.0	0.3	0.0
Net Income from Total Operations	7.3	6.6	4.9	2.3
Normalized Income	7.3	6.6	4.6	2.3
Extraordinary Income	0.0	0.0	0.0	0.0
Income from Cum. Eff. of Acct. Chg.	0.0	0.0	0.0	0.0
Income from Tax Loss Carryforward	0.0	0.0	0.0	0.0
Other Gains	0.0	0.0	0.0	0.0
Total Net Income	**7.3**	**6.6**	**4.9**	**2.3**

Questions:

1. Jeff Smith realizes that the first thing he must do is compare the liquidity, leverage, activity, and profitability ratios of the two companies. Using the income statement and balance sheet data shown in Tables 1–4, prepare a detailed comparison report indicating the strengths and weaknesses of each company.

2. Jim Clancy, a recently hired intern, has suggested to Jeff that he should include an analysis of common size statements in the report. Is Jim right? Of what use is such an analysis? Prepare common size balance sheets and income statements for Duralex and APEX Molding and discuss your findings.

3. Jim has also recommended that a DuPont analysis be done. How can such an analysis be performed, and what information does it indicate about the relative performance of the two companies?

4. What are some limitations regarding the various analyses that have been suggested above? What additional data would Jim and Jeff need to improve their findings? Are there any other calculations and comparisons that would be helpful? Please explain.

5. After collecting, compiling, and analyzing the data, what conclusions and recommendations would Jeff be justified in making in his report to Marcus?

6. In your opinion, how acute is the problem facing Duralex, Inc.? What strategic moves do you think Marcus could make to alleviate the problems?

7. How accurate are the analysts in their recommendations of the two firms?

4

Financial Forecasting

Growing Pains

"We are growing too fast," said Geoff. "I know I shouldn't complain, but we better have the capacity to fill the orders or we'll be hurting ourselves." Dawn and Geoff DeTolve started their oatmeal snacks company in 2008, upon the suggestion of their close friends who simply loved the way their oatmeal tasted. Geoff, a former college gymnastics coach, insists that he never "intended to start a business," but the thought of being able to support his college team played a significant role in motivating him to go for it.

After considerable help from local retailers and a sponsorship by a major bread company, their firm, Healthy Grains Inc., was established in 2008 and reached sales of over $4 million by 2015. Given the current trend of eating healthy snacks and keeping fit, Geoff was confident that sales would increase significantly over the next few years. The industry growth forecast had been estimated at 30% per year, and Geoff was confident that his firm would be able to at least match if not beat that rate of sales growth.

"We must plan for the future," said Dawn. "I think we've been playing it by ear for too long." Geoff immediately called their treasurer, Matt Evans. "Matt, I need to know how much additional funding we are going to need for the next year," said Geoff. "The growth rate of revenues should be between 25% and 40%. I would really appreciate if you can have the forecast on my desk by early next week."

Matt knew that his fishing plans for the weekend had better be put aside—it was going to be a long and busy weekend for him. He immediately

asked the accounting department to give him the last three years' financial statements (see Tables 1 and 2) and got right to work.

Table 1

Healthy Grains,
Income Statement
For the Year Ended Dec. 31st 2015

	2015	2014	2013
Sales	4,700,000	3,760,000	3,000,000
Cost of Goods Sold	3,877,500	3,045,600	2,400,000
Gross Profit	***822,500***	***714,400***	***600,000***
Selling and G & A Expenses	275,000	250,000	215,000
Fixed Expenses	90,000	90,000	90,000
Depreciation Expense	25,000	25,000	25,000
Earnings Before Interest and Taxes	***432,500***	***349,400***	***270,000***
Interest Expense	66,000	66,000	66,000
Earnings Before Taxes	***366,500***	***283,400***	***204,000***
Taxes @ 40%	146600	113360	81600
Net Income	***219,900***	***170,040***	***122,400***
Retained Earnings	131940	102024	73440

Table 2

Healthy Grains Inc.
Balance Sheet
For the Year Ended Dec. 31st 2015

	2015	2014	2013
Assets			
Cash and Cash Equivalents	60,000	97,376	48,000
Accounts Receivable	250,416	175,000	150,000
Inventory	511,500	390,000	335,000
Total Current Assets	*821,916*	*662,376*	*533,000*
Plant & Equipment	560,000	560,000	560,000
Accumulated Depreciation	175,000	150,000	125,000
Net Plant & Equipment	385,000	410,000	435,000
Total Assets	***1,206,916***	***1,072,376***	***968,000***
Liabilities and Owner's Equity			
Accounts Payable	135,000	151,352	128,000
Notes Payable	275,000	275,000	250,000
Other Current Liabilities	43,952	50,000	46,000
Total Current Liabilities	*453,952*	*476,352*	*424,000*
Long-Term Debt	275,000	250,000	300,000
Total Liabilities	*728,952*	*726,352*	*724,000*
Owner's Capital	155,560	155,560	155,560
Retained Earnings	322,404	190,464	88,440
Total Liabilities and Owner's Equity	***1,206,916***	***1,072,376***	***968,000***

Questions:

1. This is the first time Matt and Geoff will be conducting a financial forecast for Healthy Grains Inc. How do you think they should proceed? Which approaches or models can they use? What are the assumptions necessary for utilizing each model?

2. If Healthy Grains Inc. is operating its fixed assets at full capacity, what growth rate can it support without the need for any additional external financing?

3. Healthy Grains Inc. has a flexible credit line with the Uptown Bank. If Geoff decides to keep the debt-equity ratio constant, up to what rate of growth in revenue can the firm support? What assumptions are necessary when calculating this rate of growth? Are these assumptions realistic in the case of Healthy Grains Inc.? Explain.

4. Initially, Matt assumes that the firm is operating at full capacity. How much additional financing will it need to support revenue growth rates ranging from 25% to 40% per year?

5. After conducting an interview with the production manager, Matt realizes that Healthy Grains Inc. is operating its plant at 90% capacity. How much additional financing will it need to support growth rates ranging from 25% to 40%?

6. What actions can Geoff take in order to alleviate some of the need for external financing? Analyze the feasibility and implications of each suggested action.

7. How critical is the financial condition of Healthy Grains Inc.? Is Dawn justified in being concerned about the need for financial planning? Explain why.

8. Given that Geoff prefers not to deviate from the firm's 2015 debt-equity ratio, what will the firm's pro-forma income statement and balance sheet look like under the scenario of 40% growth in revenue for 2016 (ignoring feedback effects)?

5

Financial Analysis and Forecasting

There's More to Us Than Meets the Eye

"Greg, the board of directors' meeting is scheduled two weeks from today, and I'm depending on you to come up with a realistic and honest appraisal of our company's position," said Warren, to his assistant Greg Chapman. "I'm sure that there's more to us than meets the eye!" he quipped. "But those darn analysts are still punishing us for Robert's accounting jugglery," he said with a frown.

"Why don't you prepare a detailed financial performance analysis of the firm for the most recent three years, complete with industry comparisons and a DuPont analysis? It will help me make the case to the rating agencies that they need to raise our rating.

"After that, I'd like you to prepare a 12-month pro-forma forecast using a scenario analysis. Use our current average compound growth rate in sales as the base estimate and vary that up and down by 10% for the best-case and worst-case scenarios respectively. This will help us figure out how much additional funds we are going to have to acquire over the next year. The production folks tell me that we are currently operating at 90% of capacity, so we should be able to support some growth without additional plant and equipment," he added looking rather stressed.

Warren Badges, the new CFO of Paramount Paper Inc., was hired last year to replace Robert Malnight. Robert was fired because the firm had come under Federal investigation for noncompliance of the Sarbanes-Oxley

Act (2002). Under Robert's watch, the stock had plummeted to its all-time low despite reasonably strong sales and income growth.

Warren implemented various measures to bring the firm in compliance with the 2002 Act. The firm's sales had been increasing steadily due to its excellent commitment to quality. However, stock market analysts had been unforgiving because the stock price was still hovering around its all-time low of $12.

The significant growth rate that the firm had been experiencing had necessitated the infusion of more capital. But lenders were reluctant to lower interest rates due to their suspicions about the firm's past reporting practices. Warren had a hunch that the company could save a bundle in interest costs if the markets were convinced that the firm's accounting and reporting practices were clearly within the Sarbanes-Oxley guidelines. He knew that an upgrade in the firm's credit rating would help expedite the process.

Moreover, when he took over from Robert, Warren realized that there was no formal policy of conducting long-term planning and forecasting in place. Most of what Robert did was based on his gut feelings regarding the economy. Being an industry veteran, Warren was fully aware that haphazard growth could be a recipe for disaster. He was determined to set things straight and he knew that the market would take note.

One of the first things that Warren did upon joining Paramount was to lure his assistant, Greg Chapman, away from their prior employer, Holland Paper. Greg had been working for Holland Paper for over 10 years. When the opportunity came up, Greg initially hesitated. He was enjoying a fairly comfortable lifestyle, and the city had a lot to offer. But Warren made him an offer that he found very hard to refuse. The remuneration package included a very attractive stock option plan and a signing bonus. Moreover, Greg knew that Warren was an honest, ethical person and he enjoyed working for him.

"I'll get on it right away, Warren," promised Greg. "We'll show those dumb analysts just how wrong they are!"

Greg had the folks in accounting send him the firm's financial statements for the past three years, along with the aggregate financial statements for the select group of six firms that were their main competitors. In addition, he collected data regarding the firm's sales history, its beta estimate, and other market information. Greg was fully aware that the firm's stock price and capital cost structure depended on his analysis, and he was determined to present a comprehensive, convincing appraisal of the firm's performance to the board.

Table 1

Paramount Paper Inc.
Prior 3-Year Income Statements

	2013	2014	2015
Sales Revenues	28,255,000	37,340,000	54,670,000
Cash Operating Costs	22,321,450	32,112,400	47,562,900
Depreciation	2,775,000	2,915,000	3,513,000
Total Operating Costs	25,096,450	35,027,400	51,075,900
Operating Income (EBIT)	3,158,550	2,312,600	3,594,100
Interest Expenses	325,000	512,000	623,000
Taxable Income	2,833,550	1,800,600	2,971,100
Taxes	1,133,420	720,240	1,188,440
Preferred Dividends	108,500	136,500	171,500
Net Income	1,591,630	943,860	1,611,160

Table 2

Paramount Paper Inc.
Prior 3-Year Balance Sheets

	2013	2014	2015
Cash	396,000.00	428,000.00	587,000.00
Marketable Securities	460,000.00	540,000.00	638,000.00
Accounts Receivables	2,225,000.00	2,525,000.00	3,758,000.00
Inventories	3,850,000.00	4,950,000.00	6,013,000.00
Current Assets	6,931,000.00	8,443,000.00	10,996,000.00
Net Fixed Assets	13,875,000.00	14,576,000.00	17,568,000.00
Total Assets	20,806,000.00	23,019,000.00	28,564,000.00
Accounts Payables	425,000.00	478,000.00	518,000.00
Accruals	495,000.00	567,000.00	694,000.00
Notes Payables	150,000.00	180,000.00	175,000.00
Current Liabilities	1,070,000.00	1,225,000.00	1,387,000.00
Long Term Debt	5,250,000.00	6,714,140.00	8,985,980.00
Total Liabilities	6,320,000.00	7,939,140.00	10,372,980.00
Preferred Stock	1,550,000.00	1,950,000.00	2,450,000.00
Common Stock	10,250,000.00	9,500,000.00	10,500,000.00
Retained Earnings	2,686,000.00	3,629,860.00	5,241,020.00
Total Common Equity	12,936,000.00	13,129,860.00	15,741,020.00
Total Liabilities and Owner's Equity	20,806,000.00	23,019,000.00	28,564,000.00

Table 3

Aggregate Income Statement for Paper Industry – Select 6 for Year Ended December 31, 2015

Sales Revenues	590,000,000
Cash Operating Costs	505,040,000
Depreciation	31,270,000
Total Operating Costs	536,310,000
Operating Income (EBIT)	53,690,000
Interest Expenses	7,670,000
Taxable Income	46,020,000
Taxes	18,408,000
Preferred Dividends	590,000
Net Income	27,022,000

Table 4

Aggregate Balance Sheet for Paper Industry – Select 6 As of December 31, 2015

Cash	6,554,000.00
Marketable Securities	45,200.00
Accounts Receivables	32,046,800.00
Inventories	55,867,200.00
Current Assets	94,513,200.00
Net Fixed Assets	131,486,800.00
Total Assets	226,000,000.00
Accounts Payables	5,085,000.00
Accruals	3,073,600.00
Notes Payables	1,898,400.00
Current Liabilities	10,057,000.00
Long Term Debt	72,885,000.00
Total Liabilities	82,942,000.00
Preferred Stock	11,752,000.00
Common Stock	30,510,000.00
Retained Earnings	100,796,000.00
Total Common Equity	131,306,000.00
Total Liabilities and Owner's Equity	226,000,000.00

Table 5

Historical Sales for Paramount Paper Inc.

Year	Revenues
2005	8,825,000
2006	12,450,000
2007	13,246,000
2008	14,250,000
2009	16,275,000
2010	18,235,000
2011	21,234,000
2012	24,345,000
2013	28,255,000
2014	37,340,000
2015	54,670,000

Questions:

1. Using a cash flow statement for the most recent year, explain how Greg would sum up the company's cash position.

2. Analyze the firm's liquidity, leverage, turnover, and profitability using ratio analysis.

3. Using common size statements, help Greg present an appraisal of the company's performance and financial condition vis-à-vis its key competitors.

4. What would Greg discover after performing a DuPont Analysis on the company's key profitability ratios?

5. How much additional sales can the company support without having to add fixed assets?

6. Will Paramount Paper have to raise external capital over the next 12 months? If so how much? If not, why not?

7. Is Warren correct in saying "there is more to us than meets the eye"? Explain.

8. If you are Warren, explain how you would attempt to convince the rating agencies that the firm's debt rating should be raised.

6

Time Value of Money

Lottery Winnings—Looks Can Be Deceptive

State-sponsored lotteries are extremely popular and highly successful methods by which state governments in many countries raise much-needed funds for financing public expenses, especially education. In Michigan alone, during the year 2015, Michigan Lottery reported annual sales of $2.7 billion, and generated $795.5 million in net revenue for the state School Aid Fund, supporting public education (K-12) programs throughout the state. Retailers received annual commissions of $203.6 million, while Michigan Lottery players collected prizes worth $1.69 billion. Table 1 presents sales and funding figures accounted for by the Michigan Lottery since its inception in 1972 up until fiscal year 2015. The numbers are quite impressive!

Mega Millions is a multi-state draw game, formerly known as The Big Game. On January 31, 2010, the Multi-State Lottery Association (MUSL), an association of 37 member lotteries, joined with the 10 participating Mega Millions states including California, Georgia, Illinois, Massachusetts, New Jersey, New York, Ohio, Virginia, and Washington to participate in the Mega Millions game with Michigan. On December 12, 2010, Megaplier, an add-on game to Mega Millions, began where players can increase their prize by two to five times. The Megaplier number is selected at random before each drawing. If a player wins a non-jackpot prize on their Mega Millions wager, their prize is increased by the Megaplier number drawn and they can win up to $5 million. Beginning October 19, 2013, the Mega

Millions prize matrix changed: players select from two pools of numbers, five white ball with numbers between 1 and 75, and one gold mega balls number between 1 and 15 for a chance to win a multimillion-dollar jackpot prize. The jackpot starts at $15 million and is guaranteed to increase $5 million with every time it rolls. This game offers a second prize of $1 million and nine ways to win with guaranteed prize amounts at lower prize levels. Drawings are conducted twice a week on Tuesday and Friday.

Powerball is another multi-state draw game in which Michigan Lottery participates. It is considered nationally to be the "marquee big jackpot game." It was introduced on January 31, 2010. Players select 5 of 59 white balls and 1 of 39 red balls for a chance to win a multimillion-dollar jackpot. On January 15, 2012, the Powerball game was reintroduced at a $2 price point, with jackpots starting at $40 million. This game offers nine ways to win, with guaranteed prize amounts on lower prize levels, and includes a $1 million second prize. Drawings are conducted twice a week on Wednesday and Saturday. Power Play is an add-on game to Powerball, with a fixed prize-structure that includes prizes ranging from $8 to $2 million. A total of 47 member lotteries, Mega Millions and MUSL members participate in the Powerball game with Michigan.

In January 2016, the record-shattering Powerball jackpot amounting to $1.5864 billion was won by three ticket holders, John and Lisa Robinson, Maureen Smith, and Mae and Marvin Acosta. Each winner was awarded a nominal sum of $528.8 million. The Michigan Lottery can pay Powerball and Mega Millions jackpot winnings in one of two ways: as an annuity or in one lump-sum/cash-option payment for the present cash value of the jackpot share. When a winner selects annuity payments, the jackpot is paid out in equal installments over 30 years. When a winner selects the cash option, the Lottery pays the winner the present cash value of the announced jackpot in one lump-sum payment. In effect, the Lottery takes all of the money that would have been invested to fund the 30-year annuity and turns it all over to the winner, retaining absolutely none of the prize. All three winners of the January 2016 Powerball jackpot opted to take a cash-option payment amounting to $327.8 million per ticket.

Regardless of which option the winner selects, the Michigan Lottery is required by law to withhold estimated income taxes for federal (25%) and state (4.9%) on any prize over $5,000. These amounts are estimates only, and the winner is required to satisfy any further tax liability for the year in which the prize award is claimed.

Table 1

Totals: 1972 Start-up through FY 2015*

Total Lottery Ticket Sales	$57.84 billion
Net Revenue to Aid Education	$19.57 billion
Retailer Commissions	$ 3.77 billion
Prizes to Players	$31.58 billion

*http://www.michiganlottery.com/about_us?#financial

Questions:

1. If you were one of the three winners of the 2016 Powerball jackpot, which option would you select? Why?

2. If you decide to select the annuity option, how much money would you receive each year after taxes?

3. What discount rate is the Powerball lottery using when deciding to pay a lump sum of $327.8 million to each of the three winning ticket holders?

4. Is the State of Michigan justified in advertising the prize amount as $1.586 billion? Explain.

5. If the only option available was an annuity payment plan, what could the winner do to maximize the value of his/her winnings assuming that the risk-free rate of interest is 5%?

6. Why do most winners select the cash option plan when given a choice?

7. If Michigan Lottery would like to give the annuity option an equal chance of being selected, how would it have to structure its payments?

7

Retirement Planning

Better Late than Never

"Boy, this is all so confusing," said Jason as he stared at the papers on his desk. "If only I had taken the advice of my finance instructor, I would not be in such a predicament today." Jason Welch, aged 27, graduated five years ago with a degree in food marketing and is currently employed as a middle-level manager for a fairly successful grocery chain. His current annual salary of $75,000 has increased at an average rate of 5% per year and is projected to increase at least at that rate for the foreseeable future. The firm has a voluntary retirement savings program in place, whereby employees are allowed to contribute up to 11% of their gross annual salary (up to a maximum of $12,000 per year) and the company matches every dollar that the employee contributes. Unfortunately, like many other young people who start out in their first "real" job, Jason has not yet taken advantage of the retirement savings program. He opted instead to buy a fancy car, rent an expensive apartment, and consume most of his income.

However, with wedding plans on the horizon, Jason has finally come to the realization that he had better start putting away some money for the future. His fiancé, Jillian, of course, had a lot to do with giving him this reality check. Jillian reminded Jason that besides retirement, there were various other large expenses that would be forthcoming and that it would be wise for him to design a comprehensive savings plan, keeping in mind the various cost estimates and timelines involved.

Jason figures that the two largest expenses down the road would be those related to the wedding and a down payment on a house. He estimates that the wedding, which will take place in 12 months, should cost about $22,000 in today's dollars. Furthermore, he plans to move into a $300,000 house (in today's terms) after five years, and would need 20% for a down payment. Jason is aware that his cost estimates are in current terms and would need to be adjusted for inflation. Moreover, he knows that an automatic payroll deduction is probably the best way to go because he is not a very disciplined investor. Jason is really not sure how much money he should put away each month, given the inflation effects, the differences in timelines, and the salary increases that would be forthcoming. All this number crunching seems overwhelming, and the objectives seem insurmountable. If only he had started planning and saving five years ago, his financial situation would have been so much better. But, as the saying goes, "It's better late than never!"

Questions:

1. What was Jason's starting salary? How much could he have contributed to the voluntary savings plan in his first year of employment?

2. Had Jason taken advantage of the company's voluntary retirement plan up to the maximum every year for the past five years, how much money would he currently have accumulated in his retirement account, assuming a nominal rate of return of 7%? How much more would his investment value have been worth had he opted for a higher risk alternative (i.e., 100% in common stocks), which was expected to yield an average compound rate of return of 12% (A.P.R)?

3. If Jason starts his retirement savings plan from January of next year by contributing the maximum allowable amount into the firm's voluntary retirement savings program and continuing each year up until his retirement, how much money will he have accumulated for retirement, assuming he retires at age 65? Assume that the rate of return on the account is 7% per year, compounded monthly and that the maximum allowable contribution does not change. Calculate the value of his retirement portfolio under, both, a monthly and an annual savings plan.

4. How much would Jason have to save each month, starting from the end of the next month, in order to accumulate enough money for his wedding expenses, assuming that his investment fund is expected to yield a rate of return of 7% per year?

5. If Jason starts saving immediately for the 20% down payment on his house, how much additional money will he have to save each month? Assume an investment rate of return of 7% per year.

6. If Jason wants to have a million dollars (in terms of today's dollars) when he retires at age 65, how much should he save in equal monthly deposits from the end of the next month? Ignore the cost of the wedding and the down payment on the house. Assume his savings earn a rate of 7% per year (A.P.R.).

7. If Jason saves up the million dollars (in terms of today's dollars) by the time of his retirement at age 65, how much can he withdraw each month (beginning one month after his retirement) in equal dollar amounts, if he figures he will live to the age of 85? Assume that his investment fund yields a nominal rate of return of 7% per year.

8. After preparing a detailed budget, Jason estimates that the maximum he will be able to save for retirement is $500 per month, for the first five years. After that he is confident that he will be able to increase the monthly saving to $750 per month until retirement. If the account provides a nominal annual return of 7%, how much money will Jason be able to withdraw per month during his retirement phase?

9. What is the lesson to be learned from this case? Explain using suitable calculations.

8

Loan Amortization

Paying Off That Dream House

When Jacqueline and Keith Sommers were "house hunting" five years ago, the mortgage rates were pretty high. The fixed rate on a 30-year mortgage was 7.25%, while the 15-year fixed rate was at 6.25%. After walking through many homes, they finally reached a consensus and decided to buy a $300,000, two-story house in an up-and-coming suburban neighborhood in the Midwest. To avoid prepaid mortgage insurance (PMI), the couple had to borrow from family members and come up with a 20% down payment and the additional required closing costs. Since Jacqueline and Keith had already accumulated significant credit card debt and were still paying off their college loans, they decided to opt for lower monthly payments by taking on a 30-year mortgage, despite its higher interest rate.

Currently, due to worsening economic conditions, mortgage rates have come down significantly and a refinancing frenzy is underway. Jacqueline and Keith have seen 15-year fixed rates (with no closing costs) advertised at 2.75%, and 30-year rates at 3.75%. Jacqueline and Keith realize that refinancing is quite a hassle due to all the paperwork involved, but with rates being down to 30-year lows they don't want to let this opportunity pass them by. About two years ago, rates were down to similar levels, but they procrastinated and missed the boat. This time, however, the couple called their mortgage officer at the Uptown Bank and locked in the 2.75%, 15-year rate. Nothing was going to stop them from reducing the costs of paying off their dream house this time!

Questions:

1. What is Jacqueline and Keith's monthly mortgage payment prior to the refinancing?

2. During the first five years of owning their dream home, how much money has the couple paid towards the mortgage? What proportion of this has been applied towards interest?

3. Had the couple opted for the original 15-year mortgage proposal (15 years, 6.25%), how much higher would their monthly payment have been?

4. Under the original 15-year, 6.25% mortgage option, how much total interest would have been paid over the life of the loan?How does this compare with the total interest that would be paid on the 30-year, 7.25% mortgage?

5. If the Sommers had chosen the original 15-year, 6.25% mortgage proposal, how much tax shelter would they have lost (over the last five years) as compared to the 30-year, 7.25% mortgage?

6. If the house is currently worth $355,000 and most lenders are willing to lend up to 90% of home value, how much excess equity can the Sommers cash out?

7. Should Jacqueline and Keith cash out the excess equity that they have built up? Assume money market rates are 2.15%.

8. If the Sommers had increased each payment by one-twelfth (since the beginning of the loan), what would their current loan balance amount to?

9. Using the assumption in question 8, how many total years would it take for the Sommers to pay off the existing loan? Demonstrate your answer with an amortization schedule.

10. Should Jacqueline and Keith close the 2.75%, 15-year mortgage? Explain your answer with suitable calculations.

9

Bond Analysis and Valuation

Corporate Bonds—They Are More Complex than You Think

When John Sullivan was hired as chief investment strategist at the New York headquarters of A. M. Smith Inc., he had indicated that one of his main goals would be to significantly expand the fixed-income unit of the firm's overall investment portfolio. A. M. Smith, Incorporated, a prestigious investment services firm, had branches in 28 major metropolitan cities across the United States, as well as a few overseas branches in the United Kingdom, Canada, Singapore, and Australia. The size and performance of its equity portfolio ranked it in the top 10% of all investment companies worldwide, largely due to its excellent customer relations, research staff and client support services. However, with the recent, prolonged drop in interest rates, a constant surge in fixed-income underwriting deals seemed to be circling around the firm's radar.

John realized that the firm's client base, although pretty knowledgeable about equity investing, would need to be adequately informed, trained, and educated about the finer nuances of fixed-income investing if he stood any chance of attaining his goal. So, he hired Jill Dougherty, who had worked for a bond trading firm for almost 10 years, prior to going back to Wharton full-time to earn her MBA degree this past year. She also managed to pick up her CFA designation along the way.

John told Jill that her first major assignment would be to conduct educational seminars/workshops for current and prospective clients regarding the basic and advanced aspects of fixed income investing.

"With about 75% of our clients being in the 55+ age group, Jill, you should have no problem in signing these folks up for these workshops, and convincing them about the stability and earnings potential associated with corporate bond investing," stressed John, as he browsed through the spreadsheet containing the contact information of the firm's wealthiest investors. "You would, however, have to indoctrinate them about the various terms and features associated with these bonds, such as yield to maturity, call provisions, convertibility, duration, convexity, and the like," he added. "With the $55-million utility bond deal hanging in the balance, any help we can give our best clients in understanding the relative investment merits of this deal will surely go a long way in generating a ton of fixed-income business for the firm, don't you think?" queried John. "You bet!" replied Jill, as she contemplated John's statements, "I'll get right to work on these workshops, John. You and I both know that these corporate bond investments are more complex than you think!"

Jill immediately started preparing for the fixed-income investing workshops by surveying a sample of the firm's best clients regarding their grasp of key bond terms, features, and characteristics. She was surprised to learn how little these successful clients knew about the technical aspects of fixed-income investing, and how eager, motivated, and interested they were to know more about the opportunities offered by bond investing. Jill knew that she would have a good turnout at the seminar. She referred back to her investment analysis textbook to dig out some definitions and examples that she could use in her PowerPoint presentation. She downloaded current data for outstanding bonds of various maturities, ratings, and coupon rates (see Table 1) and started preparing her slides.

Table 1

Corporate Bond Information

Issuer	Face Value	Coupon Rate	Rating	Quoted Price	Years Until Maturity	Sinking Fund	Call Period
ABC Energy	$1,000	6%	AAA	$809.10	20	Yes	3 Years
ABC Energy	$1,000	0%	AAA	$211.64	20	Yes	NA
TransPower	$1,000	10%	AA	$1025.00	20	Yes	5 Years
Telco Utilities	$1,000	12%	AA	$1300.00	30	No	5 Years

Questions:

1. "Why is there so much variation in the coupon rates and prices of these various bonds?" asks one of Jill's wealthiest clients. How should Jill respond?

2. "How are corporate bond ratings determined?" asks another client, "And how and why do these ratings change once they are arrived at?" What should Jill say?

3. During the presentation, one client is confused about the fact that some of these bonds sell for less than their face value, while others sell at a premium. She asks whether the cheaper bonds are a bargain. How should Jill go about clearing up her confusion?

4. During the survey stage, a majority of the firm's clients had no idea about yield to maturity. Using the example of the bonds listed in Table 1, explain what this term means and how one can go about calculating it.

5. During the slideshow, Jill often made reference to a corporate bond's nominal yield and its effective yield, confusing some clients about the definition and interpretation of each term. How should Jane explain the difference between nominal and effective yield to maturity for each bond listed in Table 1? Which one should the investor use when deciding between corporate bonds and other securities of similar risk? Please explain.

6. Jill knows that the call period and its implications will be of particular concern to the audience. How should she go about explaining the effects of the call provision on bond risk and return potential?

7. How should Jill go about explaining the riskiness of each bond? Rank the bonds in terms of their relative riskiness.

8. One of Jill's best clients poses the following question: "If I buy 10 of each of these bonds, reinvest any coupons received at the rate of 6% per year, and hold them until they mature, what will my realized return be on each bond investment?" How should Jill go about demonstrating the solution to this question?

10

Valuation of Common Stock

What Are We Really Worth?

When Wayne concocted his cleaning compound some 20 years ago, all that his wife, Corrine, and he were trying to do was to come up with a sweeter, gentler yet tougher, cleaning product. Little did he realize that someday he would be the proud owner of a multimillion-dollar firm debating whether or not to sell stock to the public?

After having peddled vacuum cleaners and floor wax products at state fairs and trade shows throughout the Midwest, Wayne and Corrine Goodman realized that there was a dire need for a cleaning and polishing product that was free from harsh chemicals, environmentally friendly, and tough on dirt and grime. Wayne spent many hours in his garage at their country home in Chesterton, Indiana, experimenting with various oils, cleansing agents, and extracts until he finally came up with what he proudly calls "The perfect cleaner and polish." It was the pure citrus oil made from the peels of Valencia oranges that did the trick. Not only was the mixture sweet smelling, it was an effective solvent and degreaser that worked wonders on their kitchen cabinets at home.

Spurred on by their close friends, the Goodmans formed their company, Orange Brite (which they later changed to Orange Brite International) in December 1995, and took their dog-and-pony show on the road. Initially they sold their products mainly through word-of-mouth advertising at state fairs, and home and garden shows, but later, with the help of their three children, Kelly, Billy, and Joey, they used direct response television, direct

mail, and e-commerce channels to help grow the company's revenues at a phenomenal rate. When the Home Shopping Network agreed to let them promote their merchandise about five years ago, major retailers like Wal-Mart and Costco took notice and started stocking Orange Brite products on their shelves.

Within 20 years, sales had grown to over $500 million and their production facilities were beginning to feel the strain. Their product line had expanded to include air fresheners, soap bars, liquid soaps, spot removers, and a variety of cleaning tools. Through all this success, the Goodmans always focused on customer needs and satisfaction, always encouraging their customers to provide them with feedback and testimonials. Their latest addition, an industrial-strength cleanser and wood protector, seemed to be gaining wide acceptance both in the United States and overseas.

Wayne, who was nearing 75 years of age, knew that they would need to raise significant capital if they wanted to keep growing and expanding their product line. Still actively involved in the business, he had asked the rest of his family for their suggestions regarding the possibility of going public by issuing an initial public offering (IPO). Kelly and Joey strongly supported the idea because they felt that with competitors coming up with substitute products, they needed to stay ahead of the game. Billy, on the other hand, disagreed and recommended that they outsource production and concentrate on their marketing efforts. He preferred that the firm stay private, relying less on external capital and retaining control.

After carefully weighing all the factors, Wayne decided to explore the possibility of raising the money via an IPO. "Billy, Kelly, and Joey," he said, "the three of you have MBAs from some of the most prestigious business schools in the country. I'm sure you guys can figure out what we're really worth! I hate to depend totally on investment bankers to come up with the right price. Why don't the three of you put your heads together and figure out what is the minimum price that we should sell our stock for if we were to go public. Let's say we sell 30 million shares. I'm sure we can find a way of retaining control of a large portion of the shareholding and still raise the much-needed cash. Billy's point of loss of control is a good one, but I am not in favor of outsourcing production. Our success has come from our quality and that would likely be jeopardized if we let others produce the product."

Kelly, Billy, and Joey got to work. They realized that they would need industry and competitors' financial data. Table 1 presents key valuation data for 3 of their major publicly traded competitors in the personal and household products industry sector. Tables 2 and 3 present Orange Brite International's five-year income statements and balance sheets, respectively.

Kelly preferred to use the corporate value model, whereby the firm's value was estimated as the sum of its discounted free-cash flows. Free cash

flows were estimated by subtracting the firm's net capital investment from the year's net operating profits after taxes (NOPAT) and were discounted at a suitable risk-adjusted discount rate (weighted average cost of capital). Kelly assumed that the firm's free cash flows would grow at a rate of 20% during the first year, 10% during the second year, and finally settle down to a long-term growth rate of 6% thereafter. The firm's equity value was calculated by subtracting out the firm's outstanding debt owed to creditors from the overall value. Kelly used a risk-free rate of 4%, a market risk premium of 8%, and the average beta of the three competitors when determining the firm's cost of equity.

Having worked on various valuation projects for a major consulting firm, Billy was a strong advocate of the use of price-ratio models for valuing common stock. His method involved using suitable price-earnings, price-sales, price-book value, and price-cash flow multiples in conjunction with forecasted values for the firm's earnings, sales, book value, and cash flows respectively. Billy used the four-year average compounded growth rate when forecasting the relevant variables and then discounted the year-ahead price forecasts by the required rate of return on equity (based on the capital asset pricing model using the same inputs that Kelly used).

Joey's finance professor, Dr. Alex Hexter, on the other hand, had indoctrinated him in the art of common stock valuation via the discounting of future dividends. "Always use a realistic required rate of return and various growth rate scenarios in conjunction with industry benchmarks, when valuing growth companies," was Dr. Hexter's advice. Accordingly, Joey decided to use a variable growth rate model to value the firm's equity. "What will we do if our three estimates are totally different?" Asked Kelly looking rather concerned. "We'll have to go back to the drawing table and examine our inputs," said the ever-resourceful Billy, "We'll each have to be within a reasonable ballpark, or Dad's going to flip!"

Table 1

Key Valuation Ratios for Top 3 Competitors

	Shine Brite	ChemScape	Ultra Clean
Price/Earnings	23.6	24.6	22.8
Price/Book	7.7	12.1	4.2
Price/Sales	2.9	2.8	2.9
Price/Cash Flow Dividend	13	16.7	14.7
Yield %	1.8	1.6	1.7
Beta	1.2	1.3	1.15
Recent Price	$ 62.47	$ 57.29	$ 57.30

Table 2

Orange Brite International's 5-year Income Statements

	2011	2012	2013	2014	2015
Revenue	100,700,000	225,000,000	300,250,000	400,150,000	500,000,000
COGS (excluding depreciation)	45,315,000	108,000,000	147,122,500	184,069,000	255,000,000
Gross Profit	55,385,000	117,000,000	153,127,500	216,081,000	245,000,000
Depreciation	3,061,646	3,600,000	4,206,746	7,042,640	9,703,125
Operating Expenses	33,231,000	72,000,000	87,072,500	141,653,100	140,000,000
Earnings Before Interest & Taxes	19,092,354	41,400,000	61,848,254	67,385,260	95,296,875
Interest Expense	1,743,025	2,760,000	1,876,865	5,165,760	8,006,250
Earnings Before Taxes	17,349,328	38,640,000	59,971,389	62,219,500	87,290,625
Income Taxes	6,939,731	15,456,000	23,988,556	24,887,800	34,916,250
Net Income	10,409,597.0	23,184,000.0	35,982,833.5	37,331,700.0	52,374,375.0

Table 3

Orange Brite International's 5-year Balance Sheets

	2011	2012	2013	2014	2015
Current Assets	25,049,832	39,000,000	45,573,081	57,621,600	64,687,500
Fixed Assets	30,616,462	36,000,000	42,067,459	70,426,400	97,031,250
Total Assets	55,666,294	75,000,000	87,640,541	128,048,000	161,718,750
Current Liabilities	4,329,601	4,600,000	3,128,108	8,609,600	13,343,750
Long-Term Debt (@14% per year)	26,336,694	18,400,000	12,512,432	34,438,400	53,375,000
Owners' Equity	25,000,000	52,000,000	72,000,000	85,000,000	95,000,000
Total Liabilities and Owners' Equity	55,666,294	75,000,000	87,640,541	128,048,000	161,718,750

Questions:

1. What are the advantages and disadvantages of going public? Do you agree with Billy's concerns, or do you concur with the other members of the Goodman family regarding the issuance of an IPO? Explain why.

2. Comment on Kelly's preference of the corporate value model. Based on her approach, what would Orange Brite's selling price per share be if they were to issue 30 million shares?

3. How does Kelly's price estimate compare with Billy's price estimate based on the price-ratio models? What are the pros and cons of Billy's preferred approach?

4. How far off would Joey's price estimate be if he were to use a three-stage approach with growth assumptions of 30% for the first three years, followed by 20% for the next two years, and a long-term growth assumption of 6% thereafter? Assume that the firm pays a dividend of $1.50 per share at the end of the first year.

5. Based on all three estimates and on the valuation figures for the three competitors, how much per share do you think that Orange Brite is worth? Explain your rationale.

11

Estimating Cash Flow—New Project Analysis

The Lawn Robot: Is It Really Worth It?

If there was one thing the folks at Creative Products Corporation (CPC) knew well, it was how to come up with useful and unique products in the midst of economic adversity. With current year revenues considerably lower and profit margins shrinking due to severe price competition, the firm's engineers had been pushed hard to develop a prototype of a useful, and hopefully highly profitable, "unique" product. Last month, the design team unveiled a fully tested, prototype of their latest innovation, a remote-controlled lawn mower, the "Lawn Robot."

Surveys of retailers and customers conducted by the marketing department indicated that demand would be excellent, provided the price was lower than a riding lawn mower. The testing and development phases took almost three years and the final product passed all safety hazard tests with flying colors. After the unveiling, the product was exhibited at various home shows nationwide and received rave reviews. Full production had not yet started, however, because there had been a change in CEOs, and the new CEO was highly conservative.

Before being given the "go ahead" to go into full-scale production of the Lawn Robot, the design team had to present a detailed feasibility study to the Capital Investment Committee (CIC), which was chaired by the Vice President of Finance, Bill Burton. As was typical in a major undertaking of this type, the proposal had to include detailed cost and revenue estimates with sufficient documentation to substantiate the numbers.

Having been involved with more than a few of these kinds of proposals before, the head of the design team, Matt Robichek, knew that he had better take every possible factor into consideration and be prepared for a tough and demanding question and answer session at the next committee meeting. Luckily for Matt, his assistant, Chris Robinson, who had recently earned his chartered financial analyst (CFA) designation, was an experienced and dependable employee. Prior to being hired by CPC three years ago, Chris had worked for another large engineering company for over 10 years. "Chris, we have to dot all the 'i's' and cross all the 't's' on this one!" said Matt. "Or else the big guys are going to tear us apart, because we're talking major dollars here. Their main question is going to be, is it really worth it?"

So Matt and Chris began collecting the necessary information. They knew that to have a comprehensive feasibility study they would have to include the following:

1. Pro forma statements showing expected annual revenues, variable costs, fixed costs, and net cash flows over the economic life of the project with appropriate supporting documentation.
2. Break-even analysis.
3. Sensitivity of the cash flows to alternative scenarios of sales growth and profit margins.

Based on the data provided by the marketing department, they prepared Table 1, showing the expected unit sales of the Lawn Robot over its 10-year economic life and the expected selling price per unit. Note that the price of $1,000 per unit was estimated to gradually drop to $900 per unit over the 10-year period reflecting competitive pressures. Depreciation for this project was based on the seven-year MACRS rates as shown in Table 2. The cost of equipment, including shipping, handling, and installation, was estimated at $20 million. It was estimated that after 10 years, the equipment and tools could be sold for $4 million.

The manufacturing would be done in an unused plant of the firm. Similar plant locations could be leased for $10,000 per month. Fixed costs were estimated to be $1,500,000 per year while variable production costs per unit were expected to be $400. To get the project underway, additional inventory of $500,000 would be required. The company would increase its accounts payable by $600,000 and its accounts receivable by $1,000,000. Matt and Chris estimated that each year thereafter, the net working capital of the firm would amount to 5% of sales. The weighted average cost of capital was calculated to be 14%. Interest expenses on debt raised to fund the project were estimated to be $400,000 per year. The company's tax rate was expected to remain constant at 34%.

Table 1

Projected Unit Sales and Price for Lawn Robot

Year	Unit Sales	Unit Price
1	30,000	$1000
2	34,000	1000
3	38,800	1000
4	38,000	950
5	36,000	950
6	36,000	950
7	35,500	950
8	35,000	900
9	34,500	900
10	34,000	900

Table 2

Modified ACRS Depreciation Allowances

Year	3-Year	5-Year	7-Year
1	33.33%	20.00%	14.29%
2	44.44	32.00	24.49
3	14.82	19.20	17.49
4	7.41	11.52	12.49
5		11.52	8.93
6		5.76	8.93
7			8.93
8			4.45

Questions:

1. Prepare a pro forma statement showing the annual cash flows resulting from the Lawn Robot project.

2. Use a scenario analysis to show how the cash flows would change if the sales forecasts were 15% worse (pessimistic) and 15% better (optimistic) than the stated forecast (base).

3. Realizing that the CIC will demand some kind of sensitivity analyses, how should Matt and Chris prepare their report? Which variables or inputs obviously need to be analyzed using multiple values? Explain by performing suitable calculations.

4. How should the annual interest expenses of $400,000 be treated? Explain.

5. Using the base case estimates calculate the cash, accounting, and financial break-even of the Lawn Robot project. Interpret each one.

6. Say the company spent $500,000 in developing the prototype of the Lawn Robot. How should Matt and Chris treat this item in their report? Explain.

7. Calculate the IRR of the project. Based on your calculations what would you recommend? Why?

8. How sensitive is the net present value of the project to the cost of capital?

9. Calculate the operating leverage entailed by this project. What does it indicate?

10. What other types of contingency planning should Matt and Chris include to make the report comprehensive? Please explain the relevance of each suggestion.

12

Capital Budgeting

Too Hot to Handle

When Jenny opened her full-service salon and day spa three years ago, she knew that she would have to make some difficult choices regarding the hiring and firing of qualified professionals such as cosmetologists, estheticians, nail technicians, and massage therapists. However, she was confident that her salon management training at Palace Beauty College, coupled with her industry experience as a stylist, would serve her well.

And serve her well they certainly did! Within three years of starting her own business, and after a few setbacks, she had managed to assemble a team of 10 salon professionals, all extremely motivated, people-oriented, self-driven individuals who worked hard at retaining their clients and drumming up retail sales. Of course, Jenny had put in place an incentive plan, which the stylists found to be challenging, yet lucrative. Jenny's salon revenues had grown significantly each year to their current annual level of $500,000. On average, the salon serviced about 40 customers per day with an average ticket of $50.

However, over the past year or so a number of new salons and nail spas had opened up in the city. Competition had become much more severe, and customers were being swayed by numerous discount coupons. Jenny was well aware that her current sales growth rate of 10% would not continue for very long.

At the suggestion of some of her regular clients, she decided to explore the possibility of expanding her service offerings to include tanning booths.

She figured that such an addition would complement her current salon business by offering customers the opportunity to come in for 15 to 30 minutes and have a worthwhile tanning experience, or better still to enjoy a relaxing tan instead of waiting out in the lounge.

As Jenny began exploring the various costs and investments required, she realized that she had very little knowledge about the tanning business. What appealed to her the most was that the revenues from the tanning business would be all hers to keep, unlike the other salon services where she paid the salon professional a commission of up to 50% of the revenue generated from the services rendered. What was most confusing to Jenny was whether she should go in for the tanning dome unit or the relatively cheaper tanning bed.

"Call that toll free number that's listed on the Wolff Tanning Systems Catalog", said her ever-resourceful husband, Greg, who worked as a sales representative for a chemical company. "It always works for me," he added. After many hours of agonizing over the issue, Jenny finally gave in and made the call.

The salesman, Andrew, who answered the call was extremely helpful, courteous, and convincing. "Tanning is a great complement to a salon and spa," he said. "We have shipped many units to salons all over the country, and they seem to be doing pretty well."

"Let's say I do start the tanning service at my salon, Andrew. Should I go in for the less expensive tanning bed or the more expensive tanning dome?" asked Jenny, eager to sort out her dilemma. "Well," responded Andrew, "Each unit has its own pros and cons. The bed costs considerably less than the dome, but it takes longer for an equivalent tan per session. The dome on the other hand, costs more, but it does the job faster, provides for a complete body and facial tan, and lasts longer."

"Do you have a comparison chart showing the approximate costs, features, and revenue potential of each option, Andrew?" asked Jenny. "Absolutely," said Andrew. "I would be happy to email you a copy right now, if you like." "That would be great!" said Jenny, "It would certainly help me make an informed decision. As you can see, Andrew, I really want to figure out which of these two units is too hot to handle!"

Exhibit 1

Relevant Information

Salon Hours:	Sunday, Monday	Closed
	Tuesday-Thursday	9 AM – 7 PM
	Friday	9 AM – 5 PM
	Saturday	9 AM – 2 PM
Advertising Costs	$300 per month (Yellow Pages ad)	
	$200 per month (other advertisements)	
Jenny's after-tax cost of funds:		11% per year
Depreciation Method:		Straight line over 5 years
Tax Rate:		30%