Finance II (441) Paola Sapienza

Homework Assignment 2: Answers

1) Valuing Swing and Pool.

A) To value Swing and Pool's equity, take the expected cashflows to equity and discount them at the correct discount rate, 15%. Since Swing and Pool is all equity, valuing the equity is the same as valuing the firm's assets. From lecture 3, cashflow is defined as:

$$\text{Free Cashflow} = (\text{revenue} - \text{operating costs} - \text{depreciation}) - \text{taxes}$$
$$+ \text{depreciation} - \text{capital expenditure} - \uparrow \text{NWC}$$

$$= \text{Operating profit after taxes} - \text{net capital expenditure}$$

Start by calculating operating profit after taxes.

	1996	1997	1998	1999	2000
Net profit before tax	2,150	3,225	5,250	7,075	8,850
- Taxes (34%)	731	1,097	1,785	2,406	3,009
Profit after tax	1,419	2,129	3,465	4,670	5,841

Calculate net capital expenditure next. This is capital expenditure minus depreciation plus the increase in net working capital. Increase in net working capital is the year end level of net working capital minus last years net working capital. For 1996, the increase in net working capital is 200 (3000-2800). The cashflow generated by Swing and Pool's assets and therefore available to shareholders is:

	1996	1997	1998	1999	2000
Operating profit (after tax)	1,419	2,129	3,465	4,670	5,841
+ Depreciation	300	325	350	375	400
- Capital expenditure	-300	-340	-370	-390	-450
- Increase in NWC	-200	-300	-300	-300	-300
Free cashflow	1,219	1,814	3,145	4,355	5,491

The final step is to discount these cashflows at a rate of 15%. The value of Swing and Pool's equity is $9,720 or just under ten million dollars.

B) If the equity was worth $9,720,000 and there were 1.2 million shares outstanding, the stock price should be $8.10 per share.

C) If cashflows are growing at 6% per year, the expected cashflow in 2001 will be $5,820. Now value the cashflows from the year 2001 and beyond. Use the formula for the value of a growing perpetuity. Given a discount rate of 15%, the value of a perpetuity that pays $5,820 next year and then grows at 6% per year is $64,667.

$$V_{\text{Swing and Pool}} = \frac{C_{2001}}{(1+r)} + \frac{C_{2001}\,(1+g)^1}{(1+r)^2} + \frac{C_{2001}\,(1+g)^2}{(1+r)^3} + \ldots$$

$$= \sum_{t=1}^{\text{infinity}} \frac{C_{2001}\,(1+g)^{t-1}}{(1+r)^t} = \frac{C_{2001}}{r-g} =$$

$$= \frac{5820}{.15 - .06} = 64{,}667$$

This number is the value of Swing and Pool=s equity in the year 2000. You want the present value of this number. So discount it back an additional five years at 15% per year. The present value of $64,667 is $32,151. The value of Swing and Pool is $41,871 (9,720+31,151).

$$V_{\text{Swing and Pool}} = 9{,}720 + \frac{64{,}667}{(1 + .15)^5} = 41{,}871$$

Given 1.2 million shares, this implies a stock price of 34.89 per share.

2)

(A) This problem can be easily solved using Excel. The first step is to enable Excel's "iteration" function. To do this, go to TOOLS, OPTIONS, CALCULATION and click on the iterations box. The next step is to enter formulas for interest expense in the income statement and PLUG in the balance sheet. The following formulas should be entered:

$$\text{Int Exp}_{1998} = (.08)\,\frac{(\text{LTD}_{1997} + \text{LTD}_{1998} + \text{PLUG}_{1997} + \text{PLUG}_{1998} + \text{Notes Payable}_{1997} + \text{Notes Payable}_{1998})}{2}$$

$$\text{PLUG}_{1998} = \text{Assets}_{1998} - \text{Curr Liab}_{1998} - \text{LTD}_{1998} - \text{Def Inc Tax}_{1998} - \text{Stockholders' Equity}_{1998}$$

Finally, retained earnings for 1998 should be set equal to previous year's retained earnings plus net income minus dividend payments. Other cells are simple sums and should be straightforward. Because the cell definitions outlined here have a "circular" logic, Excel will need to iterate to find a solution. Results from this iteration are given below.

Consolidated Income Statement (in thousands)

	1997	1998 (est.)	1999 (est.)
Sales	9,186,539	12,401,828	16,742,467
Cost of goods sold	5,364,955	7,441,097	10,045,480
Payroll, occupancy, and other expenses	2,303,704	3,100,457	4,185,617
Depreciation and amortization	138,038	197,848	235,215
General and administrative charges	0	0	0
Non-recurring charge	0	0	0
Income from operations	1,379,842	1,662,426	2,276,155
Other expenses	32,277	43,574	58,825
Interest expense (r*Avg. Debt Outstanding)	52,343	73,281	91,347
Taxable income	1,295,222	1,545,571	2,125,983
Income taxes	499,400	620,822	848,687
Net income	795,822	924,749	1,277,296
Retained earnings - beginning	2,290,213	2,973,663	3,782,669
Less shareholder distributions	112,372	115,743	119,215
Retained earnings - ending	2,973,663	3,782,669	4,940,750
Additional paid-in capital	0	0	0

Consolidated Balance Sheet (in thousands)

Assets			
Cash and equivalents	445,421	601,318	811,780
Accounts receivable	1,754,137	2,378,433	3,210,884
Inventories	1,338,640	1,855,178	2,504,490
Prepaid expenses	157,058	212,028	286,238
Refundable income taxes	0	0	0
Deferred income taxes	135,663	0	0
Total current assets	3,830,919	5,046,957	6,813,392
Plant, property and equipment (net)	922,369	1,096,576	1,196,210
Other assets:			
Intangible assets	464,191	626,658	845,988
Deferred income taxes	143,728	0	0
Total other assets	607,919	626,658	845,988
Total assets	5,361,207	6,770,190	8,855,589
Liabilities and Shareholders' Equity			
Current liabilities:			
Accounts payable	687,121	958,169	1,293,528
Accrued expenses	570,504	770,180	1,039,744
Current maturities of long-term debt	2,216	2,216	2,216
Notes payable	553,153	553,153	553,153
Income taxes payable	53,923	53,923	53,923
Total current liabilities	1,866,917	2,337,641	2,942,563
Bank loan (PLUG)	0	129,253	451,649
Long-term debt less current maturities	296,020	296,020	296,020
Convertible subordinated notes	0	0	0
Deferred income taxes	42,132	42,132	42,132
Total liabilities	2,205,069	2,805,046	3,732,364
Paid-in capital	182,475	182,475	182,475
Retained earnings	2,973,663	3,782,669	4,940,750
Total stockholders' equity	3,156,138	3,965,144	5,123,225
Total liabilities and stockholders' equity	5,361,207	6,770,190	8,855,589

2) Martin&Marietta solution see spreadsheet on the web.