
VALUING FIRMS WITH NEGATIVE EARNINGS
Problem 1

A.

<i>Year</i>	<i>EPS</i>
1984	\$0.69
1985	\$0.71
1986	\$0.90
1987	\$1.00
1988	\$0.76
1989	\$0.68
1990	\$0.09
1991	\$0.16
1992	(\$0.07)
1993	(\$0.15)

Average Earnings Per Share = \$0.48

Normalized Earnings Per Share in 1994 = $\$0.48 * 1.06 = \0.51

B.

Normalized Earnings Per Share = \$0.51

- (Cap Ex - Deprec'n) * (1 - Debt ratio) = \$0.25

- Working Capital * (1 - Debt ratio) = \$0.06

Normalized FCFE Next Year = \$0.19

(Assume that capital expenditures and depreciation will grow 6% in 1994.)

Problem 2

A.

Total Assets in 1993 = \$25,000 (in millions)

Normalized Return on Assets = 12%

Normalized Return on Assets (pre-tax) = 20%

Normalized Income statement (based upon 12% ROA)

Earnings Before Interest and Taxes = 5000

Interest Expenses = 1400

Earnings Before Taxes = 3600

Taxes (at 40%) =	1440
Net Income =	2160
- (Cap Ex - Deprec'n) * (1-Debt ratio) =	500
FCFE	1660

Cost of Equity = $7\% + 1.1 * 5.5\% = 13.05\%$

Expected Growth Rate = 5%

Earnings before interest and taxes is calculated using the ROA:

$ROA = EBIT (1 - \text{tax rate}) / \text{Total Assets} = 12\%$ (given in the problem)

Value of Equity = $(1660 * 1.05) / (.1305 - .05) = \$21,652$

B. Value of Equity = $\$21,652 / 1.1305^2 = \$16,942$

Problem 3

A.

Earnings Before Interest and Taxes = \$52.70

- Interest Expense = \$17.00

Earnings Before Taxes = \$35.70

- Taxes (40%) = \$14.28

Earnings After Taxes = \$21.42

- (Cap Ex - Deprec'n) * (1-Debt Ratio) = \$3.75

- Working Capital * (1- Debt Ratio) = \$4.76

FCFE = \$12.91

EBIT = Interest Expense * Interest Coverage Rate = $\$17 * 3.10 = \$ 52.70$

The change in working capital is based upon revenues growing at 4%.

B. Cost of Equity = $7\% + 1.1 * 5.5\% = 13.05\%$

Expected Growth Rate = 4%

Value of Equity = $12.91 * 1.04 / (.1305 - .04) = \148.36 million

Problem 4

A.

<i>Year</i>	<i>Net Income (in millions)</i>
1987	\$0.30
1988	\$11.50
1989	(\$2.40)
1990	\$7.20

1991	(\$4.60)
1992	(\$1.90)
Average =	\$1.68

Net Income =	\$1.68
- (Cap Ex - Deprec'n) * (1 - Debt ratio) =	1.30
= FCFE =	\$0.38

B. Cost of Equity (until 1996) = 7% + 1.2 * 5.5% = 13.6%

Cost of Equity (after 1996) = 7% + 5.5% = 12.5%

<i>Year</i>	<i>Net Income</i>	<i>(Cap. Ex - Deprec'n) * (1 - Debt Ratio)</i>	<i>FCFE</i>	<i>Terminal Value</i>
1993	\$1.78	\$1.37	\$0.42	
1994	\$1.89	\$1.43	\$0.45	
1995	\$2.00	\$1.50	\$0.50	
1996	\$2.12	\$1.58	\$0.54	\$11.20
Term Year	\$2.23	\$1.70	\$0.63	

Terminal Value = $\$0.63 / (.125 - .05) = \8.40 million

Value of Equity

$$= 0.42/1.136 + 0.45/1.136^2 + 0.50/1.136^3 + (0.54 + 8.40)/1.136^4$$

$$= \$6.43 \text{ million}$$

Value per Share = \$ 6.43 million / 0.5 = \$12.86

Problem 5

A.

	<i>Equity</i>	<i>Debt</i>
Market Value Weight	61.61%	38.39%
Cost of Component	13.33%	5.10%
Cost of Capital =	13.33% (0.6161) + 5.1% (0.3839) = 10.17%	

B.

<i>Year</i>	<i>1993</i>	<i>1994</i>	<i>1995</i>	<i>1996</i>	<i>Terminal Year</i>
EBIT (1-t)	\$8.25	\$9.08	\$9.98	\$10.98	\$11.42
- (Cap Ex - Deprec'n)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
- Working Capital	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Special Cases in Valuation 5

PV		-\$106.42	\$85.68	\$276.69	\$466.94	\$4,723.55	
Value of firm	\$5,446.45						
EBITDA Margin	6.00%	8.80%	11.60%	14.40%	17.20%	20.00%	20.00%
NOL	700	1016	1114.2	955.88	496.754	0	

b. If there was a 20% chance of bankruptcy, the value of the firm today can be written as follows:

DCF Value (1- Probability of distress) + Distress sale value (probability of distress)

$$= 5446.45 (1-.20) + .6 * 1250 * .20 = \$4,507 \text{ million}$$