
ESTIMATING EQUITY VALUE PER SHARE
Problem 1

Value of operating assets=	$250(1-.4)(1-.3333)(1.05)/(.10-.05) =$	\$1,049.90
+ Cash =		\$500.00
- Debt =		\$750.00
Value of equity =		\$799.90
Value per share =		\$4.00

Problem 2

Value of equity =	\$ 799.90 million
- Equity Options =	\$ 250.00 million
Value of equity in common stock =	\$ 599.90 million
Value per share =	$599.90/200 = \$ 3.00$

Problem 3

Exercise proceeds from the options = $6 * 50 = \$ 300$ million

Treasury stock value per share = $(\text{Value of Equity} + \text{Exercise proceeds}) / (\text{Number of shares} + \text{Number of options}) = (799.9 + 300) / (200 + 50) = \4.40 per share

A more conservative estimate would be obtained if we considered only in-the-money options for this calculation.

Problem 4

Market value of equity = \$ 25,000 million

Market value of debt = \$ 5000 million

Market value of firm = \$ 30,000

- Cash = \$ 3,000

Enterprise value = \$ 27,000

Cost of capital = $12.5\% (25/30) + 5\% (5/30) = 11.25\%$

Enterprise value = $\text{EBIT} (1-t) (1- \text{Reinvestment rate}) (1+g) / (r -g)$

$$27000 = \text{EBIT} (1-.3) (1 - .06/.15) (1.06) / (.1125-.06)$$

Solving for EBIT,

$$\text{EBIT} = \$3184 \text{ million}$$

Problem 5

You would expect to see \$1,200 million, which is the sum of the total operating earnings of the two firms. Consolidation requires that you show 100% of the operating earnings of the subsidiary.

Problem 6

$$\text{Value of Genome Sciences} = 300 (1.06)(1-.40)/(.12 - .06) = \$3,180 \text{ million}$$

$$\text{Value of Gene Therapies} = .10 (100 * 50) = \quad \quad \quad \$ 500 \text{ million}$$

$$\text{Value of Genome Sciences (with minority holding)} = \quad \quad \quad \$ 3,680 \text{ million}$$

$$- \text{Debt} = \quad \quad \quad \$ 800 \text{ million}$$

$$\text{Value of Equity} = \quad \quad \quad \$ 2,880 \text{ million}$$

$$\text{Value per share} = 2880/50 = \$57.60$$

Problem 7

If the fund can never be liquidated,

$$\text{Estimated value of } \$ 1 \text{ invested in fund at } 9\% (r = 12\%) = .09/.12 = \$0.75$$

The discount should be 25%.

If the fund will be liquidated in 10 years

$$\text{Estimated value of } \$ 1 \text{ invested at } 9\% \text{ for } 10 \text{ years } (r = 12\%) = \$0.83$$

The discount should be 17%.

Problem 8

$$\text{Analyst's estimate of value of equity} = 11 * 1.4 = \quad \$15.40 \text{ million}$$

a. Estimated value with treasury stock approach

$$\text{Value per share} = (15.40 + 0.4 * 5) / 1.4 = \$12.43 \text{ per share}$$

b. With option pricing approach

Value per option ($S=12.5, K=5, t=3, r=5\%, \text{Std dev}=80\%$) = \$9.32

Value of Equity = \$15.40 million

Value of options = $0.4 \times 9.32 =$ \$ 3.73 million

Value of equity in common stock = \$ 11.67 million

Value per share = $\$11.67/1 =$ \$ 11.67/share

c. You could re-estimate the value of the options using the estimated value per share of \$ 11.67 to arrive at a value of each option of \$8.55. This would of course change the value per share to a slightly higher value. You could continue until you converge on a value per share.
