

VALUE ENHANCEMENT: A DISCOUNTED CASHFLOW

VALUATION FRAMEWORK

**Problem 1**

- a. It should have no effect on value, since expected cash flows are unchanged by the announcement.
- b. The stock price might be affected. To the extent that investors form expectations based upon what they know about the firm, this action might lower expectations for the future and reduce the perceived value. The fact that value does not change but price may drop reflects the likelihood that this stock was over valued before it announced the restructuring.

**Problem 2**

a.

(in billions)	Pre-cutting	Post-cutting
Revenues	10	10
Operating Income	0.3	0.4

Change in operating income = 100 million

Change in after-tax operating income =  $100(1-.4) = 60$

Present value of savings over time =  $60(1.05)/(.10 - .05) = \$ 1,260.00$

b. Value of firm before cost-cutting =  $(300(1-.4))(1.05)/(.10-.05) = 3780$

Value of firm after cost cutting =  $(400(1-.4))(1.045)/(.10-.045) = 4560$

Change in firm value = \$780.00

**Problem 3**

a. Cost of capital =  $12\% (.6) + 8\% (1-.4) (.4) = 9.12\%$

Value of firm =  $(100*(1-.4)-25) (1.04)/(.0912-.04) = \$ 710.94$

b. With a 0% tax rate, Cost of capital =  $12\% (.6) + 8\%(.4) = 10.40\%$

Value of firm =  $(100 -25) (1.04)/(.104-.04) = \$ 1,218.75$

**Problem 4**

a.

EBIT (1-t)	\$ 262.50
- Net Cap Ex	\$ 105.00
- Chg in WC	\$ 50.00
FCFF	\$ 107.50

Value of firm =  $107.5 / (.09 - .05) = \$2687.50$

b. With 50% lower WC requirement

EBIT (1-t)	\$ 262.50
- Net Cap Ex	\$ 105.00
- Chg in WC	\$ 25.00
FCFF	\$ 132.50

Value of firm =  $132.5 / (.09 - .05) = \$3,312.50$

Change in value of firm = \$625.00. In fact, if the working capital change applied to existing working capital as well, there will be an additional one-time cash inflow of \$ 500 million (50% of \$ 1 billion).

c. Effect of lower growth

EBIT (1-t)	\$ 261.88
- Net Cap Ex	\$ 104.75
- Chg in WC	\$ 23.75
FCFF	\$ 133.38

Value of firm =  $133.38 / (.09 - .0475) = \$3,138.24$

Change in value = \$ 450.74

**Problem 5**

Return on capital =  $50 / 250 = 20\%$

Reinvestment rate =  $25 / 50 = 50\%$

- a. Expected Growth rate =  $0.5 \times 0.2 = 10.0\%$
- b. Expected Growth rate with higher reinvestment rate =  $0.8 \times .20 = 16\%$
- c. Expected Growth rate with lower return on capital =  $0.8 \times .15 = 12\%$

### Problem 6

- a. Expected Growth = Reinvestment rate x Return on capital =  $50\% \times 10.69\% = 5.35\%$

Cost of capital = Cost of equity =  $11.5\%$

- b. Value of firm = \$ 2 billion  $(1 - \text{Reinvestment Rate}) (1+g)/(\text{Cost of capital} - g) = \$16.25$  billion

With no growth and reinvestment, Compaq's value is  $\$ 2 \text{ billion} / .115 = 17.39$

Value destroyed by new investments =  $\$ 17.39 - \$ 16.25 = \$1.14$

### Problem 7

- a. Expected Growth rate =  $5.35\%$  (Nothing changes)
- b. Cost of capital =  $12.5\% (0.8) + 4.5\% (0.2) = 10.90\%$
- Value of firm =  $\$ 2 (1-.5)/(0.109-.0535) = \$18.00$
- c. Value of firm with no growth or reinvestment =  $\$18.35$

Value destroyed by new investments =  $\$0.35$

### Problem 8

- a. Return on Capital =  $(0.2)(25)/5 = 100\%$

Reinvestment rate =  $50\%$

Expected growth in Operating income =  $50.00\%$

- b. Return on capital with generic margins =  $0.075(25)/5 = 37.5\%$

Expected growth in operating income =  $18.75\%$

### Problem 9

Value of firm with no advertising campaign (10 million growing at  $15\%$  for 3 years, constant forever thereafter) =  $\$147.08$

Value of firm with advertising campaign = PV(10 million growing 15% for 10 years, constant forever thereafter) - PV of Cost of advertising campaign = \$160.37

*To solve for the probability*

Increase in value from advertising = Value of firm with advertising - Value of firm without advertising = \$ 137.64

Present value of advertising cost = PV of \$ 50 million for 3 years = \$124.34

Probability of success needed =  $X (137.64) = 124.34$

Probability = 90.34%

### **Problem 10**

Return on capital = After-tax Operating Margin \* Sales/Capital = 7.50%

Reinvestment rate = 60%

Expected growth = 4.500%

a. Value of firm =  $300 (1-.6) (1.045)/(.10 -.045) = \$ 2,280.00$

b. New return on capital =  $5\% * 2.5 = 12.50\%$

Reinvestment rate = 40%

Expected growth = 5.00%

Value of firm =  $300 (1-.4)(1.05)/(.09-.05) = \$4,725.00$

Change in firm value = \$2,445.00