

## CHAPTER 32

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 VALUE ENHANCEMENT: EVA, CFROI AND OTHER TOOLS
 

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**Problem 1**

Book value of equity at start of year =  $1,250 - 50 = \$1200$  (after subtracting out retained earnings of \$50 million)

Book value of debt at start of year =  $350 - 50 = \$300$

Book value of capital at start of year = \$1500

a. Return on capital =  $180/1500 = 12\%$

b. Cost of capital =  $12\%(2500/(2500 + 350)) + 5\% (350/(2500+350)) = 11.14\%$  (Note that the market value of equity was double the book value at the end of 1998.)

c. EVA =  $(.12 - .1114) (1500) = \$12.89$

**Problem 2**

PV of EVA over time =  $12.89 (1.05)/(.1114-.05) = \$220.43$

Capital invested in firm = \$1600

a. Value of firm = \$1820.43

b. Portion of value from excess returns = \$220.43

c. Market value added at this firm = \$220.43

d. PV of EVA for next 5 years = 12.89 growing at 5% for next 5 years = \$54.52

Value of firm =  $1600 + 54.52 = \$1654.52$

Portion of value from excess returns = \$54.52

Market value added at this firm = \$54.52

**Problem 3**

Year	Operating lease commitment	PV of commitment
1	55	\$ 51.89
2	60	\$ 53.40
3	60	\$ 50.38
4	55	\$ 43.57
5	50	\$ 37.36
yr 6-15	40	\$ 220.00

		\$ 456.59
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Capital invested before operating leases (in millions) = \$ 1,000.00

Capital invested after operating leases = \$ 1,456.59

Operating income before operating lease adjustment = \$150

Operating income after operating lease adjustment = \$177.40

Return on capital before lease adjustment = 9%

Return on capital after lease adjustment = 7.31%

Cost of capital before lease adjustment = 11%

Cost of capital after =  $11\%(2/2.457) + 6\%(1-.4)(.457/2.457) = 9.62\%$

EVA before lease adjustment =  $(.09-.11) (1000) = -\$20.00$

EVA after lease adjustment =  $(.0731-.0962) (1457) = -\$33.74$

#### Problem 4

Return on capital =  $1/5 = 20\%$

Cost of capital =  $.12(.75) + .045(.25) = 10.125\%$

a. EVA =  $(.20 - .1025) (1000) = \$ 97.50$

b. Return on capital for the industry = 22.22%

EVA based on industry numbers =  $(.2222-.10) (1000) = \$122.22$

c. Sevilla underperformed the industry

#### Problem 5

a. EVA this year = 20 million -  $60*.15 = \$11.00$

PV of EVA over next 5 years = \$55.00 (note that the growth and discount rates offset each other.

Capital invested = \$60.00

Value of firm = \$115.00

b. EVA this year = 20 million - 40\*0.15 = \$14

PV of EVA over next 5 years = \$70.00

Capital invested = \$40.00

Value of firm = \$110.00

### Problem 6

Gross Investment before inflation adjustment = \$150

Gross Investment after inflation adjustment =  $\$150 (1.02)^5 = \$ 165.61$

After-tax Operating Income each year = \$ 20.00

Salvage Value = \$50.00

Life of assets = 10 + 5 = 15

Solve for IRR, with PV=165.61, PMT=15, FV=50 and n=15

Year	Flow
0	\$ (165.61)
1	\$ 20.00
2	\$ 20.00
3	\$ 20.00
4	\$ 20.00
5	\$ 20.00
6	\$ 20.00
7	\$ 20.00
8	\$ 20.00
9	\$ 20.00
10	\$ 20.00
11	\$ 20.00
12	\$ 20.00
13	\$ 20.00
14	\$ 20.00
15	\$ 70.00

$$\text{CFROI} = 9.85\%$$

b. With economic depreciation method

$$\text{Economic Depreciation} = (165.61 - 50) * 0.0784 / [(1.0784^{15}) - 1] = \$4.31$$

$$\text{Adjusted CFROI} = (20 - 4.31) / 165.61 = 9.47\%$$

c. Real cost of capital =  $(1.10/1.02) - 1 = 7.84\%$

The firm's CFROI exceeds its real cost of capital. It is taking good projects.