CHAPTER 32

VALUE ENHANCEMENT: EVA, CFROI AND OTHER TOOLS

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Operating lease commitment</th>
<th>PV of commitment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>55</td>
<td>$ 51.89</td>
</tr>
<tr>
<td>2</td>
<td>60</td>
<td>$ 53.40</td>
</tr>
<tr>
<td>3</td>
<td>60</td>
<td>$ 50.38</td>
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</tbody>
</table>
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*0.15 = $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

<table>
<thead>
<tr>
<th>Year</th>
<th>Flow</th>
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<tbody>
<tr>
<td>0</td>
<td>$ (165.61)</td>
</tr>
<tr>
<td>1</td>
<td>$ 20.00</td>
</tr>
<tr>
<td>2</td>
<td>$ 20.00</td>
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<td>3</td>
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<tr>
<td>4</td>
<td>$ 20.00</td>
</tr>
<tr>
<td>5</td>
<td>$ 20.00</td>
</tr>
<tr>
<td>6</td>
<td>$ 20.00</td>
</tr>
</tbody>
</table>
b. With economic depreciation method

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

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.