**Fall 1997**

**Problem 1**

<table>
<thead>
<tr>
<th></th>
<th>Terminal Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPS</td>
<td>$1.50 $1.80 $2.16 $2.59 $2.75</td>
</tr>
<tr>
<td>FCFE</td>
<td>$(2.00) $(1.20) $0.34 $0.09 $1.50</td>
</tr>
<tr>
<td>Net Cap Ex</td>
<td>$3.50 $3.00 $1.82 $2.50 $1.25</td>
</tr>
</tbody>
</table>

a. Terminal Value of Equity = $1.50/(.125 - .06) = $23.01

Cost of Equity = 7% + 1 (5.5%) = 12.50%

b. Value per Share today

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCFE</td>
<td>$(2.00) $(1.20)</td>
<td>$0.34</td>
<td>$0.09</td>
<td></td>
</tr>
<tr>
<td>Terminal Value</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PV at 15.25%</td>
<td>$(1.74) $(0.90)</td>
<td>$0.22</td>
<td>$13.09</td>
<td></td>
</tr>
</tbody>
</table>

Value of the Stock = $10.67

Cost of Equity = 15.25%

**Problem 2**

Reinvestment Rate = 5/12.5 = 40%

Reinvestment Amount = 36% This year

Firm Value = (150 * .6 - 36)*1.05 / (.10 - .05) = $1,134.00

**Problem 3**

Cost of Capital = 11.40% (.9) + 7.5% (0.6) * .1 = 10.71%

Cost of Equity = 7% + 0.8 * 5.5% = 11.40%

I should have given you a return on capital to let you compute a reinvestment rate. If you assume a zero reinvestment rate, you get

Value/Sales Ratio = .03*.05 / (.1071 - .05) = 0.551663748

If you had assumed that the ROC = Cost of capital, the reinvestment rate = 5%/1.071 = 46.69%

Using this reinvestment rate would have lowered the value to sales ratio :03*.4669*.05/(1.071-.05) = 0.257546101

If management is improved,

Unlevered Beta = 0.8 / (1+(1-.4)(1/9)) = 0.75

New Beta = 0.75 (1+ (1-.4) (3/7)) = 0.942857143

New Cost of Equity = 0.07 + 0.94 (.055) = 0.121857143

New Cost of Capital = 12.18% (.7) + 8% (1-.4) (.3) = 9.97%

Value/Sales Ratio = .07 *0.6 *1.05/(0.997-.05) = 0.887323944

The Value/Sales ratio will increase by roughly 0.34.

**Problem 4**
\[ N(d_1) = 0.6517 \]
\[ N(d_2) = 0.5675 \]

Probability that the firm will go bankrupt = 0.3483 - 0.4286 (It is equal to 1 - N(d))

Value of Equity = 9 = 75 (.6517) - K \exp (-.07)(5)(.5675)
\[ K = \frac{(75 \times .6517 - 9)}{(\exp (-0.07)(5) \times 5714)} \]
Solving,
\[ K = \$ 99.72 \]
Implied interest rate = 8.60%

### Problem 5

a. Valuing G&P

Capital Invested = 2000

EVA created this year = (.13-.11)(2000) = 40

PV of EVA = 40 \times 1.05/(.11-.05) = 700

Value of Firm = 2000 + 700 = 2700

b. Valuing BandAdd

Capital Invested = 500

EVA this year = (.16 -.12)(500) = 20

PV of EVA = 20 \times 1.05/(.12-.05) = 300

Value of Firm = 500 + 300 = 800

c. Capital Invested = 2500

Combined Operating Income = (.13\times2000+.16\times500) = 340

Restated Operating Income = 340 (1.10) = 374

Restated EVA = (374 - .10\times2500) = 124

PV of EVA, assuming 5% growth = 2604

New Firm Value = 2500 + 2604 = 5104

Value of Synergy = 5104 - (2700 + 800) = 1604

### Spring 1998

#### Problem 1

<table>
<thead>
<tr>
<th>Year</th>
<th>Growth rate</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EBIT (1-t)</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100.00</td>
<td>120.00</td>
<td>144.00</td>
<td>151.20</td>
</tr>
</tbody>
</table>
Cost of Equity 15.00% 14.50% 14.00% 12.50%
Cost of Debt 7.00% 7.00% 7.00% 7.00%
Debt Ratio 10.00% 20.00% 30.00% 40.00%
Return on Capital 25.00% 25.00% 25.00% 15.00%

EBIT (1-t) $100.00 $120.00 $144.00 $151.20
- Reinvestment $80.00 $96.00 $115.20 $50.40
FCFF $20.00 $24.00 $28.80 $100.80
Terminal Value $2,411.48
Cost of Capital 13.92% 12.44% 11.06% 9.18%
Cumulative WACC 113.92% 128.09% 142.26% 155.32%
PV $17.56 $18.74 $1,715.39
Value of Firm = $1,751.68
Reinv. Rate 0.8 0.8 0.8 0.333333333

Problem 2

<table>
<thead>
<tr>
<th></th>
<th>BancFirst</th>
<th>Farmers Bank</th>
<th>Without synergy</th>
<th>With Synergy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Income</td>
<td>$144</td>
<td>$250</td>
<td>$394</td>
<td>$424</td>
</tr>
<tr>
<td>Book Value of Equity</td>
<td>$1,200</td>
<td>$2,500</td>
<td>$3,700</td>
<td>$3,700</td>
</tr>
<tr>
<td>Beta</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Return on equity</td>
<td>12.00%</td>
<td>10.00%</td>
<td>11.00%</td>
<td>11.46%</td>
</tr>
<tr>
<td>Payout ratio</td>
<td>50.00%</td>
<td>40.00%</td>
<td></td>
<td>47.64%</td>
</tr>
</tbody>
</table>

Value of Synergy = $3893 - $3315 = $578.1818182

- Value of Synergy if it does not start for 4 years = $374.0804061

Problem 3

<table>
<thead>
<tr>
<th></th>
<th>Status Quo</th>
<th>Optimally Manage</th>
<th>Value of Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debt Ratio</td>
<td>0.00%</td>
<td>30.00%</td>
<td></td>
</tr>
<tr>
<td>Return on Capital</td>
<td>10.00%</td>
<td>15.00%</td>
<td></td>
</tr>
<tr>
<td>Beta</td>
<td>0.8</td>
<td>1.01</td>
<td></td>
</tr>
<tr>
<td>Cost of Equity</td>
<td>10.40%</td>
<td>11.53%</td>
<td></td>
</tr>
<tr>
<td>Cost of Capital</td>
<td>10.40%</td>
<td>9.42%</td>
<td></td>
</tr>
<tr>
<td>Reinvestment Rate</td>
<td>0.5</td>
<td>0.333333333</td>
<td></td>
</tr>
</tbody>
</table>

Value $1,458.33 $3,561.74 $2,003.24 ! The improvement in return on capital on existing assets boosts the current EBIT
b. Expected Market Price today = 1458 + 0.5($2003) = $2,459.95 ! Equity investors get it all....
Problem 4

Revenues $12,500.00
- Oper. Exp $11,000.00
- Deprecn $2,000.00
EBIT $500.00
- Int. Exp $1,000.00
Taxable Income $1,500.00
- Taxes -
Net Income $(1,500.00)

a. Value of Firm = $15,000.00
Value of Debt = $8,500.00
Value of Equity = $6,500.00

b. S = Firm Value = 15000
K = Value of Debt = 20000 ! Remember to include the expected coupon payments to the debt.
r = 0.06
T = 6.5
Variance = 0.1223 ! Variance = 12 (Monthly Variance); Monthly Variance= 0.05(.2)2+0.01(.8)2+2(.05)0.5(.01)0.5(.2)(.8)(.25)

c. N(d1) = 0.7123
N(d2) = 0.3704
Probability of bankruptcy = 29% to 63%

d. Value of Equity = 15000(0.7123) - 20000(exp(-(0.06)(6.5)))(.3704) = $5,670.00

Fall 1998

Problem 1

a. Estimated FCFF next year
EBIT (1-t) $252.00
- Reinvestment $100.80 ! Reinvestment Rate = g/ ROC = .05/.125 = .4
FCFF $151.20

Value of Firm = 151.2/ (.10 - .05) = 3024

b. Expected Tax Savings from NOL

<table>
<thead>
<tr>
<th>EBIT</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>$420.00</td>
<td>$441.00</td>
<td></td>
</tr>
</tbody>
</table>
NOL Carry Forward $420.00 $441.00
Taxable Income $- $-
Taxes $168.00 $176.40
PV of Savings $152.73 $145.79

Total PV of Savings = $298.51

**Problem 2**

<table>
<thead>
<tr>
<th>Business</th>
<th>Net Income</th>
<th>Book Value of Eq</th>
<th>Sector Reg</th>
<th>ROE</th>
<th>Expected PBV</th>
<th>Expected Market Value of Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel</td>
<td>$150.00</td>
<td>$1,500.00</td>
<td>PBV = 0.8 + 1.5</td>
<td>0.1</td>
<td>0.95</td>
<td>1425</td>
</tr>
<tr>
<td>Financial Services</td>
<td>$300.00</td>
<td>$2,000.00</td>
<td>PBV = 1.3 + 1.0</td>
<td>0.15</td>
<td>1.45</td>
<td>2900</td>
</tr>
<tr>
<td>Technology</td>
<td>$100.00</td>
<td>$500.00</td>
<td>PBV = 3.5 + 2.5</td>
<td>0.2</td>
<td>4</td>
<td>2000</td>
</tr>
<tr>
<td>Retailing</td>
<td>$200.00</td>
<td>$1,000.00</td>
<td>PBV = 1.75 + 1.8</td>
<td>0.2</td>
<td>2.11</td>
<td>2110</td>
</tr>
</tbody>
</table>

b. Effect of Divestiture
Value Effect of Divestiture = 2500 - 2000 = 500
Effect on value per share = 500/400 = 1.25

**Problem 3**

Expected Depreciation in year 4 = 10 (1.10)^3 (1.05) = $13.98
Expected Capital Expenditures in year 4 = $13.98 (1.50) = $20.96
Expected Net Capital Expenditures in year 4 = $6.99
Expected present value of net capital expenditures in perpetuity = $85.16 ![6.99/(.11-.05)]/1.113
New Estimate of Value = 400 - 85.16 = $314.84

**Problem 4**

\[ S = PV \text{ of Cashflows on project} = PV \text{ of $100 million growing 5% a year for 14 years} = 802.1010597 \]
Cost of Capital for Genzyme = 0.139
K = Cost of taking project today = 1000
r = 5%
t = 14
Variance in firm value = Variance in Genzyme's firm value = 0.25
Dividend Yield = 1/14 = 0.071428571

**Problem 5**

<table>
<thead>
<tr>
<th>Merrill Lynch</th>
<th>Schwab</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>No of Shares</td>
<td>330</td>
<td>260</td>
</tr>
<tr>
<td>MV of Equity- before</td>
<td>21450</td>
<td>10400</td>
</tr>
</tbody>
</table>
MV of Equity- after
Synergy
b. Cashflow/(.10-.03) = 640
Solving for the cash flow,
Cash Flow = 44.8

Problem 6
Cost of Capital = (.105)(.8)+(.06)(.6)(.2) = 0.0912
Book value of equity at beginning of year = 300 - 25 = $275.00 Since no new equity issued, equity affected by retained earnings
Book Value of debt at beginning of year = 250 - 50 = $200.00
Book Value of Capital at beginning of year = $475.00
EVA = 50 -.0912 (475) = $6.68

Spring 1999
Problem 1

<table>
<thead>
<tr>
<th>Novotel</th>
<th>VideoGraf</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROC</td>
<td>9.60%</td>
</tr>
<tr>
<td>Reinv Rate</td>
<td>0.520833333</td>
</tr>
<tr>
<td>FCFF</td>
<td>46</td>
</tr>
<tr>
<td>Cost of Capital</td>
<td>9.52%</td>
</tr>
<tr>
<td>Firm Value</td>
<td>1069.530558</td>
</tr>
</tbody>
</table>

b. Value of Synergy
New ROC = (450+160)*.6/((1000+2400)*.8) = 13.46%
New Reinvestment Rate = 0.371584699
New Beta after restructuring = 0.9
New Cost of Equity = 0.1067
New Cost of Capital = 10.67% (0.75) + .08*0.6*.25 = 9.20%
New Value = 5746.579417
Value of Synergy = 5747 - (1070+3488) = $1,189.45

Problem 2
Solve for the FCFF used by the analyst
Value of firm prior to liquidity discount = 65/(1-.35) = 100
Cost of Capital used by analyst = 25% (.5) + 5% (.5) = 15%
FCFF used by analyst : 100 = FCFF (1.05)/(.15 -.05) = $9.52 ! $10 million if solving for next year's FCFF

Cost of Equity for firm = 5% + 1.1 (6.3%) = 11.93%
Cost of Capital for firm = 11.93% (.9) + 5% (.1) = 11.24%

Firm Value = 9.52 (1.05)/(1.124 - .05) = $160.33! No liquidity discount since firm is being sold to a publicly traded firm with diversified stockholders

**Problem 3**

a. Talbot's: Low PE, High Growth, Low Risk, High Payout: Best of All Worlds
b. Abercrombie: High PE, Low Growth, High Risk, Low Payout: Worst of all worlds

**Problem 4**

PBV = 0.5 = ROE * Payout ratio * (1+g)/(r -g)  
g = 4%; ROE = 8%
Payout ratio = 1 - g/ROE = 1 - .04/.08 = 50%
Solve for r which is the cost of equity
0.5 = .08*.5*(1.04)/(r - .04)
r = (0.08*.5*1.04+0.5*0.04)/0.5 = 0.1232

With the new return on equity of 16%
Payout ratio = 1 - g/ROE = 1 - .04/.16 = 0.75
New Price to Book Ratio= .16*0.75*1.04/((.1232-.04) = 1.5

This problem could have been solved even more quickly using PBV = (ROE -g)/(cost of Equity - g)

**Problem 5**

Value of the firm = 500
Value of developed assets = 30 (PVA,12%,10) = 169.5066909
Value of option = $330.49

Let
S = PV of Cash flows from undeveloped product
K = S+150  ! Since net present value is -150
r = 5%
t = 15
y = Cost of Delay = 1/15
N(d1) = 0.75  ! N(d1) will always be higher than N(d2)
N(d2) = 0.60

Setting up,
330.49 = S exp (-1)* (.75) - (S+150) exp (-.10*15) (.6)
If you solve for S,
exp(-1) = 0.367879441
exp(-1.5) = 0.22313016

330.49 = S(0.3679)(40) - (S+150)(0.47232231)(60)
S = $2,468.29

**Fall 1999**

**Problem 1**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4 (Terminal year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIT</td>
<td>$100.00</td>
<td>$125.00</td>
<td>$156.25</td>
<td>$164.06</td>
</tr>
<tr>
<td>Net Cap Ex</td>
<td>$30.00</td>
<td>$37.50</td>
<td>$46.50</td>
<td>$32.00</td>
</tr>
<tr>
<td>Total Working Capital</td>
<td>$60.00</td>
<td>$70.00</td>
<td>$82.00</td>
<td>$88.00</td>
</tr>
<tr>
<td>Cost of Equity</td>
<td>12%</td>
<td>11%</td>
<td>11%</td>
<td>10%</td>
</tr>
<tr>
<td>Pre-tax Cost of borrow</td>
<td>8.00%</td>
<td>7.50%</td>
<td>7%</td>
<td>7%</td>
</tr>
<tr>
<td>Debt Ratio</td>
<td>25%</td>
<td>25%</td>
<td>25%</td>
<td>25%</td>
</tr>
</tbody>
</table>

**Cash Flows for next 3 years**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3 (Terminal year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tax rate</td>
<td>0</td>
<td>16%</td>
<td>40%</td>
</tr>
<tr>
<td>EBIT(1-t)</td>
<td>100</td>
<td>105</td>
<td>93.75</td>
</tr>
<tr>
<td>Net Cap Ex</td>
<td>$30.00</td>
<td>$37.50</td>
<td>$46.50</td>
</tr>
<tr>
<td>chg WC</td>
<td>$8.00</td>
<td>$10.00</td>
<td>$12.00</td>
</tr>
<tr>
<td>FCFF</td>
<td>$62.00</td>
<td>$57.50</td>
<td>$35.25</td>
</tr>
</tbody>
</table>

Cost of Equity | 12% | 11% | 11% | 10% |
AT Cost of Debt | 8% | 6% | 4% |
Cost of Capital | 11.00% | 9.83% | 9.30% | 8.55% |

Terminal Value = 60.44/(.0855-.05) = $1,702

Value of firm = 62/1.11+57.50/(1.11*1.0983)+35.25/(1.11*1.0983*1.093)+1702/(1.11*1.09833*1.093) = $1,406.78

**Problem 2**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHP</td>
<td>$100</td>
<td>$120</td>
<td>$144</td>
<td>$173</td>
</tr>
<tr>
<td>HA</td>
<td>$60</td>
<td>$69</td>
<td>$79</td>
<td>$91</td>
</tr>
<tr>
<td>Combined firm (with synergy)</td>
<td>$172</td>
<td>$203</td>
<td>$239</td>
<td>$282</td>
</tr>
<tr>
<td>CF from synergy</td>
<td>$12</td>
<td>$14</td>
<td>$16</td>
<td>$18</td>
</tr>
</tbody>
</table>

Value of AHP = $2,894.82
Value of HA = $1,542.37
Value of Combined firm= $4,745.66
Value of Synergy = $308.47

Problem 3
PE Ratio for the industry = 20
Based upon valuation of 2 billion and net income of 100
PEG Ratio for the industry = 2
PEG Ratio for Sysoft = 2.5
1.25 times the industry average PEG ratio
PE ratio for Sysoft = 37.5
Value of Sysoft Equity = 3750

Problem 4
a. Value of firm = $15,000
PV of Cash flows from = $3,890
Value of undeveloped = $11,110

a. Increase
b. Effect uncertain. Price increase is good, but variance drop is bad.
c. Effect uncertain. Increase in interest rates increases the value of the call, but the PV of oil will decrease as well (reducing S)
d. Decrease

Problem 5
a. ROC = 0.075
ROC = After tax margin* Capital turnove ratio = .03*2.5
Expected Growth Rate = 0.045
ROC * Reinvestment Rate
Value of firm = 2280
= 300 (1-.6)(1.045)/(.10-.045)

b. Restructured Return o = 0.125
New growth rate = 0.05
Value of firm (restruct) = 4725
= 300 (1-.4)(1.05)/(.09-.05)
Change in firm value = 2445

If you assume that the improvement in margins increases oprating income from existing assets,
Restructured Return o = 0.125
New growth rate = 0.05
Value of firm (restruct) = 7875
= 500 (1-.4)(1.05)/(.09-.05)
Change in firm value = 5430

Spring 2000
Problem 1
PV of operating leases = 1000 (PVA,7%, 5 years) = $4,100.20
Imputed interest expense on operating leases = $287.01
Adjusted Operating income = 1000 + 287 + 1000 - 600 = $1,687.00
After-tax Operating income (without tax benefit) = $1,012.20
If you considered the extra tax benefit of R&D being expensed,
Tax benefit from R&D expensing = (1000 - 600)*0.4 = $160.00
After-tax Operating income (with tax benefit) = $1,172.20

Book Value of Capital = BV of Debt + Operating leases + BV of Equity + Value of research asset = 1000 + 4100 + 5000 + 3000 =

Reinvestment rate = (Cap Ex - Depreciation + R&D - Amortization of R&D) / Adjusted EBIT(1-t) = 69.16%

Problem 2
a. Return on Capital = 2.5*20% = 0.5
Reinvestment rate = 5%/50% = 0.1
Value to Sales ratio = 0.20*(1-.10)*(1.05)/(.10-.05) = 3.78

b. Return on Capital = 3*8% = 24%
Reinvestment rate = 5%/24% = 0.20833333
Value to Sales ratio = 0.08*1.05*(1-.2083)/(.10-.5) = 1.33

c. Sales fro firm = 5000 *2.5 = $12,500
Brand name value = (3.78-1.33) (12500) = $30,624

Problem 3
a. Value of Existing product = 120 million (PVA, 8 years, 11%) = $617.53
b. Net present value of project = -2500 + 250 (PVA, 16 years, 11%) = ($655.21)
c. Value of the patent
S = 1844.79
K = 2500
t = 16 years
y = 1/16 = 0.0625
Variance = 0.10
Value of the patent = 1844.79 e(-.0625*16) (.6368) - 2500 e (-.06*16) (.1841) = $256.00

Problem 4

<table>
<thead>
<tr>
<th></th>
<th>TriMedia</th>
<th>Leppard</th>
<th>Combined firm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of Equity</td>
<td>9.60%</td>
<td>10.40%</td>
<td>10.87%</td>
</tr>
<tr>
<td>Cost of Debt</td>
<td>4.20%</td>
<td>0.042%</td>
<td>4.50%</td>
</tr>
<tr>
<td>Debt Ratio</td>
<td>10%</td>
<td>10%</td>
<td>30%</td>
</tr>
<tr>
<td>Cost of Capital</td>
<td>9.06%</td>
<td>9.78%</td>
<td>8.96%</td>
</tr>
</tbody>
</table>

Unlevered beta for TriMedia= 0.84375
Unlevered beta for Leppard = 1.03125
Weighted Unlevered Beta = 0.84375(1/3) + 1.03125(2/3) = 0.96875
Levered beta at 30% debt ratio = 1.217857143

FCFF next year for TriMedia : 1000 = X/(.0906-.05); Solve for X
FCFF next year = $40.60
FCFF next year for Leppard : 2000 = X/(.0978-.05)
FCFF next year = $95.60

Value of combined firm = (40.6+ 95.6)/(.0898-.05) = $3,439.39
Value of combined firm without synergy = $3,000.00
Value of Synergy = $439.39

Fall 2001

Problem 1

<table>
<thead>
<tr>
<th>Current</th>
<th>1</th>
<th>2</th>
<th>3 Terminal year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>$1,000.00</td>
<td>$1,300.00</td>
<td>$1,690.00</td>
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<tr>
<td>EBITDA</td>
<td>-$100.00</td>
<td>-$65.00</td>
<td>-$84.50</td>
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<tr>
<td>Depreciation</td>
<td>$100.00</td>
<td>$100.00</td>
<td>$100.00</td>
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<tr>
<td>EBIT</td>
<td>-$165.00</td>
<td>-$15.50</td>
<td>$449.25</td>
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<tr>
<td>NOL Carryforward</td>
<td>$330.50</td>
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<tr>
<td>Taxable income</td>
<td>-$165.00</td>
<td>-$15.50</td>
<td>$118.75</td>
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<tr>
<td>Taxes</td>
<td>$47.50</td>
<td>$186.89</td>
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<tr>
<td>EBIT(1-t)</td>
<td>-$165.00</td>
<td>-$15.50</td>
<td>$401.75</td>
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<tr>
<td>+ Depreciation</td>
<td>$100.00</td>
<td>$100.00</td>
<td>$100.00</td>
</tr>
<tr>
<td>- Cap Ex</td>
<td>$50.00</td>
<td>$50.00</td>
<td>$50.00</td>
</tr>
<tr>
<td>FCFF</td>
<td>-$115.00</td>
<td>$34.50</td>
<td>$451.75</td>
</tr>
</tbody>
</table>
Problem 2
PE = 13.5 \times 7.5 + 52.5 \times 0.2 - 5 \times 0.9
Value of equity = 675

Total beta = 2.25
PE = 6.75
Value of equity = 337.5

Problem 3
Unlevered beta of Silverado Stores = 0.77 ! 1.20/(1+(1-.3)(80/100))
Unlevered beta of Zale Distributors = 1.05 ! 1.30/(1+(1-.3)(50/150))
Unlevered beta of combined firm = 0.92 + 0.77 (180/380) + 1.05 (200/380)
Levered beta of combined firm = 1.25
Cost of equity = 10.01%
Cost of capital = 8.27%

Value of synergy = 306,277,749 ! 10/(.0827-.05)
Note that $10 million is next year

Problem 4
Return on capital = 5.00%
Reinvestment rate = 60.00% \times G/ROC = 3/5 = 60%
Value of Uvian = 50*(1-.5)(1-.6)(1.03)/(.08-.03) = 206

Unlevered beta = 0.75 ! Back out from cost of equity of 8%
Levered beta = 0.8625
Cost of equity = 8.45%
Cost of capital = 7.48%
New pre-tax return on capital = 20% \times (50*2)/ 500
New after-tax return on capital = 12%
Reinvestment rate = 25%
Value of Uvian = $1,034.60
Problem 5
Cost of capital = 5% + 1.4*4% = 0.106! Equal to cost of equity
Value of commercial product = $49.19

Value of patent
S = 88.2300754
K = 150
t = 15
r = 5%
Std dev = 40%
y = 0.06666667! Alternatively, 12/88.23
Value of patent = $12.57