Chapter 26

26-1
a to d: see below:

	Grumman Independent	*Northrop Independent*	*Combined No synergy*	*Combined With Synergy*
Revenues	$3,281	$4,620	$7,901	$7,901
- COGS	$2,920	$4,043	$6,963	$6,795
- Depreciation	$74	$200	$274	$274
= EBIT	$287	$378	$664	$832
EBIT (1-t)	$187	$245	$432	$541
- £GWC	$16	$22	$38	$38
= FCFF	$171	$223	$394	$503
Cost of Equity	12.50%	12.50%	12.50%	12.50%
Cost of Debt	5.53%	5.53%	5.53%	5.53%
WACC	11.38%	11.98%	11.73%	11.73%
Firm Value	$2,681	$3,199	$5,879	$7,479

e. Synergy Gain = $7,479 - $5,879 = $1,600
Note: Firm Value = $FCFF_1$/(WACC - g)

26-2
a & b.

	Without Added Debt	*With Added Debt*
Revenues	$7,901	$7,901
- COGS	$6,795	$6,795
- Depreciation	$274	$274
= EBIT	$832	$832
EBIT (1-t)	$541	$541
- £GWC	$38	$38
= FCFF	$503	$503
Beta	1.00	1.08
Cost of Equity	12.50%	12.92%
Cost of Debt	5.04%	5.20%
WACC	11.68%	11.37%
Firm Value	$7,540	$7,897

Beta with Added Debt = Unlevered Beta (1 + (1 - t) (Debt/Equity))
= 0.93 (1 + (1 - 0.4) (0.25)) = 1.08

c. The equity investors should gain the additional value of $357 million.

26-3
a., b., c., & d.

	Novell	*WordPerfect*	*No synergy*	*w/ Synergy*
Revenues	$1500	$690		$2,232
COGS	$855	$518		$1,406
Depreciation	$53	$29		$83
EBIT	$593	$144		$743
EBIT (1-t)	$385	$93		$483
- Cap Expenditure	$94	$46		$143
+ Depreciation	$53	$29		$83
- £GWorking Capital	$120	$27		$147
= FCFF	$224	$49		$276
Cost of Equity (Initial)	14.98%	13.88%		14.85%
Cost of Equity (Stable)	13.05%	13.05%		13.05%
Value of firm	$12,659	$1,630	$14,289	$14,727

The cost of equity is also the weighted average cost of capital because neither firm has any debt.
The weights are based upon the estimated values.
(The free cash flow to the firm under synergy in year 1 is greater than the sum of the FCFF of the two individual firms because of the higher growth rate in cash flows. All the estimated numbers under synergy are based upon the new expected growth rate which is 24%.)
e. Value of Synergy = 14,727 – 14,289 = $438 million
Maximum Price for Wordperfect = 1,630 + 438= $2,068 million

26-4
If the synergy takes 5 years to materialize,
PV of Synergy = $438 million / $(1.1485)^5$ = $219 million
The expected growth rates were assumed too high and for too long.

26-5

a. Value of Synergy	**Pre-merger**	**Post-merger**
Value of Aetna	22,800	21,800
Value of US Healthcare	1,550	1,875
Total	24,350	23,675

The total market value of the two firms declined by $ 675 million after the merger was announced. This would suggest that the market does not believe that there is synergy.

b. Managers may be over optimistic about the potential for synergy, while markets might be much too pessimistic. I would tend to believe the markets.

26-6
a. Tax Savings Next Year = $2 Billion(0.4) = $800 million
If you can get this saving immediately, this would also be the value of tax savings.
If you have to wait a year to get the tax savings,

PV of Tax Savings = 800/1.12 = $714 million

b. PV of Tax Savings = $200 (PVA, 12%, 4 years) = $607.47 million

26-7
I would expect it to be shared between the two companies, if there are no competing bidders on the horizon. If there are, I would expect the target company's stockholders to get the benefits.

26-8
a. , b. & c.

	PMT Corporation	*Peer Group*	*Best Managed*
Return On Capital	8.00%	12.00%	18.00%
Dividend Payout Ratio	50.00%	30.00%	20.00%
Debt Equity Ratio	10.00%	50.00%	50.00%
Interest Rate on Debt	7.50%	8.00%	8.00%
Beta	1.06	1.30	1.30
Growth Rate-First 5 Years	4.18%	10.92%	19.68%
Payout Ratio after Year 5	28.14%	61.54%	75.61%
Growth Rate After Year 5	6.00%	6.00%	6.00%
Cost of Equity	12.83%	14.15%	14.15%
Value of Equity Per Share	$12.65	$25.18	$41.94

Growth Rate-First 5 years = (1 - Payout) (ROC + D/E (ROC - i (1-t))
Payout After 5 Years = 1 - g / (ROC + D/E (ROC - i (1-t))

26-9
a. While the overall evidence on stock price reaction to anti-takeover amendments is mixed, I would expect stockholders to react negatively in this case, because of PMT's history of poor performance.

b. It would not, but I would probably be even more aggressive in ensuring that the management does not adopt this clause.

26-10
a.

	1	*2*	*3*	*4*	*5*	*Term. Year*
Revenues	$1,100,000	$1,210,000	$1,331,000	$1,464,100	$1,610,510	$1,707,141
- Expenses	$440,000	$484,000	$532,400	$585,640	$644,204	$682,856
- Depreciation	$100,000	$110,000	$121,000	$133,100	$146,410	$155,195
= EBIT	$560,000	$616,000	$677,600	$745,360	$819,896	$869,090
- Interest Exp.	$360,000	$324,000	$288,000	$252,000	$216,000	$180,000
= Taxable Income	$200,000	$292,000	$389,600	$493,360	$603,896	$689,090
- Tax	$80,000	$116,800	$155,840	$197,344	$241,558	$275,636
= Net Income	$120,000	$175,200	$233,760	$296,016	$362,338	$413,454
+ Depreciation	$100,000	$110,000	$121,000	$133,100	$146,410	$155,195

- Capital Expenditure	$120,000	$132,000	$145,200	$159,720	$175,692	$186,234
- £GWC	$20,000	$22,000	$24,200	$26,620	$29,282	$19,326
- Principal Repaid	$300,000	$300,000	$300,000	$300,000	$300,000	$0
= FCFE	($220,000)	($168,800)	($114,640)	($57,224)	$3,774	$363,089
+ Interest (1-t)	$216,000	$194,400	$172,800	$151,200	$129,600	$108,000
+ Princ. Repaid	$300,000	$300,000	$300,000	$300,000	$300,000	$0
= FCFF	$296,000	$325,600	$358,160	$393,976	$433,374	$471,089

b.

	1	*2*	*3*	*4*	*5*	*6*
Equity	$1,000,000	$1,120,000	$1,295,200	$1,528,960	$1,824,976	$2,187,314
Debt	$3,000,000	$2,700,000	$2,400,000	$2,100,000	$1,800,000	$1,500,000
D/E Ratio	3.00	2.41	1.85	1.37	0.99	0.69
Beta	2.58	2.25	1.95	1.68	1.47	1.30
Cost of Equity	24.90%	23.11%	21.41%	19.95%	18.78%	17.86%
Cum. COE	1.25	1.54	1.87	2.24	2.66	3.14
WACC	11.63%	11.87%	12.18%	12.57%	13.03%	13.53%
Cum WACC	1.12	1.25	1.40	1.58	1.78	2.02

Cost of Equity in Year 2 = Cost of Equity in Year 1 - ($Beta_1 - Beta_2$)(5.5%)
= 24.90% - (2.58 - 2.25)(5.5%) = 23.11%

c. Terminal Value of Equity = $363,089/(.1786-.06) = $3,060,662
Terminal Value of Firm = Terminal Value of Equity + Outstanding Debt
= 3,060,662 + 1,500,000 = 4,560,662

d. PV to Equity Investors
= -220,000/1.249 -168,800/(1.249)(1.2311) - 114,640/ (1.2490)(1.2311)(1.2141)
- 57,224/(1.2490) (1.2311)(1.2141) (1.1995) + (3774
+ 3,060,662)/(1.2490) (1.2311)(1.2141) (1.1995)(1.1878)
= $779,220 < 1,000,000
Deal does not make sense from the viewpoint of equity investors.
PV to firm = Discount FCFF at WACC = 3,833,357 < 4,000,000
Overall, deal does not make sense.

26-11
a. No. The stockholders could do it themselves at far lower costs.

b. Yes. Diversification may provide a benefit to the owner of a private firm, since much of his or her wealth is probably concentrated in the firm.

c. If by doing this acquisition, the publicly traded firm was able to increase its debt capacity substantially and take better projects, it might make sense to do the acquisition.