CHAPTER 23:
BASICS OF VALUATION

23-1
a. False. The dividend discount model can still be used to value the dividends that the company will pay after the high growth eases.

b. False. It depends upon the assumptions made about expected future growth and risk.

c. False. This will be true only if the stock market falls more than merited by changes in the fundamentals (such as growth and cash flows).

d. True. Portfolios of stocks that are undervalued using the dividend discount model seem to earn excess returns over long time periods.

e. True. The model is biased toward these stocks because of its emphasis on dividends.

23-2
a. Cost of Equity = 6.25% + 0.90 * 5.5% = 11.20%
Value Per Share = \$3.56 * 1.055/(.1120 - .055) = \$65.89

b. \$3.56 (1 + g)/(.1120 - g) = \$80
Solving for g, g = (80 * .112 - 3.56)/(80 + 3.56) = 6.46%

23-3
a. There will be an increase in the stable growth rate; the discount rate will also go up.

b. The stable growth rate will be higher, if the economy is growing faster.

c. The stable growth rate will not be affected, but the high growth period for this company will be longer.

d. Again the stable growth rate will be unaffected, but the high growth period and growth rate will be higher.

23-4
a. Expected Earnings Per Share in 1999 = \$2.10 * 1.155*1.06 = \$4.48
Expected Dividends Per Share in 1999 = \$4.48 * 0.65 = \$2.91
Cost Of Equity After 1999 = 6.25% + 1.1*5.5% = 12.30%
Expected Price at the End of 1998 = Expected DPS in 1999/(k_e, at 1999 - g)
= \$2.91/(.1230 - .06) = \$46.19

b.

Year	EPS	DPS	
1994	$2.42	$0.79	
1995	$2.78	$0.91	
1996	$3.19	$1.05	
1997	$3.67	$1.21	
1998	$4.22	$1.39	$46.19

Cost of Equity = 6.25% + 1.40 * 5.5% = 13.95%
PV of Dividends and Terminal Price (@ 13.95%) = $27.59

23-5
a. Retention Ratio = 1 - Payout Ratio = 1 - 0.42/1.50 = 72%
Return on Assets = (Net Income + Interest Expense (1-t))/(BV of Debt + BV of Equity)
Debt/Equity Ratio = 7.6/160 = .0475
Interest Rate on Debt = 0.8/7.6 = 10.53%
Expected Growth Rate = 0.72 [.1819 + .0475 (.1819 - .1053 * (1 - 0.385))] = 13.5%
Alternatively, and much more simply, Return on Equity = 30/160 = .1875
Expected Growth Rate = 0.72 * .1875 = 13.5%

b. Expected payout ratio after 1998:
= 1 - g/[ROA + D/E (ROA - i (1-t))]
= 1 - .06/(.125+.25(.125 - .07(1-.385)) = 58.76%

c. Beta in 1993 = 0.85
Unlevered Beta = 0.85/(1 + (1 - 0.385) * 0.05) = 0.8246
Beta After 1998 = 0.8246 * (1 + (1 - 0.385) * 0.25) = 0.95

d. Cost of Equity in 1999 = 7% + 0.95 * 5.5% = 12.23%
Expected Dividend in 1999 = ($1.50 * 1.1355 * 1.06) * 0.5876 = $1.76
Expected Price at End of 1998 = $1.76/(.1223 - .06) = $28.25

e.

Year	EPS	DPS	
1994	$1.70	$0.48	
1995	$1.93	$0.54	
1996	$2.19	$0.61	
1997	$2.49	$0.70	
1998	$2.83	$0.79	$28.25

Cost of Equity = 7% + 0.85 * 5.5% = 11.68%
PV of Dividends and Terminal Price (@ 11.68%) = $18.47
f. Total Value per Share = $18.47

Value Per Share Using Gordon Growth Model = $1.50 * 1.06 * 0.5876/(.1223 - .06) = $15.00
Value Per Share With No Growth = $1.50 * 0.5876/.1223 = $7.21
Value of Extraordinary Growth = $18.47 - $15.00 = $3.47
Value of Stable Growth = $15.00 - $7.21 = $7.79

23-6
a.

Period	EPS	DPS
1	$4.58	$0.79
2	$5.32	$0.92
3	$6.17	$1.07
4	$7.15	$1.21
5	$8.30	$1.43
6	$9.46	$2.35
7	$10.59	$3.56
8	$11.65	$4.94
9	$12.58	$6.44
10	$13.34	$8.00

b. Expected Price at End of 2003
= ($13.34 * 1.06 * 0.60)/(.1175 - .06) = $147.54
(Cost of Equity = 6.25% = 5.5% = 11.75%)

c.
PV of Dividends - High Growth = $3.67
PV of Dividends - Transition = $9.10
PV of Terminal Price = $44.59
Value Per Share = $57.36

23-7
a. Value Per Share = $1.70 * 1.07/(.1203 - .07) = $36.20
(Cost of Equity = 6.25% + 1.05 * 5.50% = 12.03%)

b.
Current Earnings per share = $3.20
(1 - Desired Debt Fraction) * (Capital Spending - Depreciation) = 83.61%* $ 1.00 = $0.84
(1 - Desired Debt Fraction) *¡µ Working Capital = 83.61% *$0.00 = $0.00
Free Cash Flow to Equity = $2.36
Cost of Equity = 6.25% + 1.05 * 5.5% = 12.03%
Value Per Share = $2.36 * 1.07/(.1203 - .07) = $50.20
This is based upon the assumption that the current ratio of capital expenditures to depreciation is maintained in perpetuity.

c. The FCFE is greater than the dividends paid. The higher value from the model reflects the additional value from the cash accumulated in the firm. I would use the FCFE model, because it is a more realistic model.

23-8

a.

Year	EPS	Cap Exp	Depr	Δ WC	FCFE	Term Price
1	$2.71	$2.60	$1.30	$0.05	$1.64	
2	$3.13	$3.00	$1.50	$0.05	$1.89	
3	$3.62	$3.47	$1.73	$0.05	$2.19	
4	$4.18	$4.00	$2.00	$0.06	$2.54	
5	$4.83	$4.62	$2.31	$0.06	$2.93	$84.74
6	$5.12	$4.90	$4.90	$0.04	$5.08	

Net capital expenditures (Cap Ex - Depreciation) and working capital change is offset partially by debt (20%). The balance comes from equity. For instance, in year 1:
FCFE = $2.71 - ($2.60 - $1.30) * (1 - 0.20) - $0.05 * (1 - 0.20) = $1.64)
Cost of Equity = 6.5% + 1 * 5.5% = 12%
Terminal Value Per Share = $5.08/(.12 - .06) = $84.74
Present Value Per Share =
1.64/1.12 + 1.89/1.122 + 2.19/1.123 + 2.54/1.124 + (2.93 + 84.74)/1.125 = $55.89

b.

Year	EPS	Cap Exp	Depr	D WC	FCFE	Term Price
1	$2.71	$2.60	$1.30	$0.05	$1.64	
2	$3.13	$3.00	$1.50	$0.05	$1.89	
3	$3.62	$3.47	$1.73	$0.05	$2.19	
4	$4.18	$4.00	$2.00	$0.06	$2.54	
5	$4.83	$4.62	$2.31	$0.06	$2.93	$52.09
6	$5.12	$4.90	$2.45	$0.04	$3.13	

Terminal Value Per Share = $3.13/(.12 - .06) = $52.09
Present Value Per Share =
1.64/1.12 + 1.89/1.122 + 2.19/1.123 + 2.54/1.124 + (2.93+52.09)/1.125 = $37.36

c.

Year	EPS	Cap Exp	Depr	D WC	FCFE	Term Price
1	$2.71	$2.60	$1.30	$0.05	$1.43	
2	$3.13	$3.00	$1.50	$0.05	$1.66	
3	$3.62	$3.47	$1.73	$0.05	$1.92	
4	$4.18	$4.00	$2.00	$0.06	$2.23	
5	$4.83	$4.62	$2.31	$0.06	$2.58	$45.85

6	$5.12	$4.90	$2.45	$0.04	$2.75

Terminal Value Per Share = $2.75/(.12 - .06) = $45.85
Present Value Per Share =
1.43/1.12 + 1.66/1.122 + 1.92/1.123 + 2.23/1.124 + (2.58 + 45.85)/1.125 = $32.87
The beta will probably be lower because of lower leverage.

23-9
a.

Year	EPS	Cap Ex	Deprec'n	Change in WC	FCFE	Terminal Price
1	$2.30	$0.68	$0.33	$0.45	$1.57	
2	$2.63	$0.78	$0.37	$0.48	$1.82	
3	$2.99	$0.89	$0.42	$0.51	$2.11	
4	$3.41	$1.01	$0.48	$0.54	$2.45	
5	$3.89	$1.16	$0.55	$0.57	$2.83	$61.32
6	$4.16	$0.88	$0.59	$0.20	$3.71	

Net capital expenditures (Cap Ex - Depreciation) and working capital change is offset partially by debt
The balance comes from equity. For instance, in year 1 -
FCFE = $2.30 - ($0.68 - $0.33) * (1 - 0.10) - $0.45 * (1 - 0.10) = $1.57)
b. Terminal Price = $3.71/ (.1305 - .07) = $61.32
c. Present Value Per Share = $1.57/1.136 + 1.82/1.136^2 + 2.11/1.136^3 + 2.45/1.136^4 + (2.83 + 52.69)/1.1$
$39.61

23-10
a.

Year	**1**	**2**	**3**	**4**	**5**
Earnings	$0.66	$0.77	$0.90	$1.05	$1.23
(CapEx-Deprec'n) * (1-δ)	$0.05	$0.06	$0.07	$0.08	$0.10
Δ Working Capital * (1-δ)	$0.27	$0.31	$0.37	$0.43	$0.50
FCFE	$0.34	$0.39	$0.46	$0.54	$0.63
Present Value	$0.29	$0.30	$0.30	$0.31	$0.31

Year	**6**	**7**	**8**	**9**	**10**

Growth Rate	14.60%	12.20%	9.80%	7.40%	5.00%
Cumulated Growth	14.60%	28.58%	41.18%	51.63%	59.21%
Earnings	$1.41	$1.58	$1.73	$1.86	$1.95
(CapEx-Deprec'n) * (1-δ)	$0.11	$0.13	$0.14	$0.15	$0.16
Δ Working Capital * (1-δ)	$0.45	$0.39	$0.30	$0.22	$0.13
FCFE	$0.84	$1.07	$1.29	$1.50	$1.67
Beta	1.38	1.31	1.24	1.17	1.1
Cost of Equity	14.59%	14.21%	13.82%	13.44%	13.05%
Present Value	$0.37	$0.41	$0.43	$0.44	$0.43
End-of-Life Index					1

Stable Growth Phase
Growth Rate: Stable Phase = 5.00%
FCFE in Terminal Year = $1.92
Cost of Equity in Stable Phase = 13.05%
Price at the End of Growth Phase = $23.79
PV of FCFE in High Growth Phase = $1.51
Present Value of FCFE in Transition Phase = $2.08
Present Value of Terminal Price = $6.20
Value of the Stock = $9.79

b.

Year	**1**	**2**	**3**	**4**	**5**
Earnings	$0.66	$0.77	$0.90	$1.05	$1.23
(CapEx-Deprec'n)* (1-δ)	$0.05	$0.06	$0.07	$0.08	$0.10
Δ Working Capital * (1-δ)	$0.27	$0.31	$0.37	$0.43	$0.50
FCFE	$0.34	$0.39	$0.46	$0.54	$0.63
Present Value	$0.29	$0.30	$0.30	$0.31	$0.31

Transition Period (up to ten years)

Year	**6**	**7**	**8**	**9**	**10**
Growth Rate	14.60%	12.20%	9.80%	7.40%	5.00%
Cumulated Growth	14.60%	28.58%	41.18%	51.63%	59.21%
Earnings	$1.41	$1.58	$1.73	$1.86	$1.95
(CapEx-Deprec'n)*(1-δ)	$0.11	$0.13	$0.14	$0.15	$0.16
Δ Working Capital *(1-δ)	$0.50	$0.48	$0.43	$0.36	$0.26
FCFE	$0.79	$0.97	$1.16	$1.35	$1.54
Beta	1.38	1.31	1.24	1.17	1.1
Cost of Equity	14.59%	14.21%	13.82%	13.44%	13.05%
Present Value	$0.34	$0.37	$0.39	$0.40	$0.40

End-of-Life Index	1

Stable Growth Phase
Growth Rate in Stable Phase = 5.00%
FCFE in Terminal Year = $1.78
Cost of Equity in Stable Phase = 13.05%
Price at the End of Growth Phase = $22.09
PV of FCFE in High Growth Phase = $1.51
Present Value of FCFE in Transition Phase = $1.90
Present Value of Terminal Price = $5.76
Value of the Stock = $9.17

c.

Year	**1**	**2**	**3**	**4**	**5**
Earnings	$0.66	$0.77	$0.90	$1.05	$1.23
(CapEx-Deprec'n) * (1-δ)	$0.05	$0.06	$0.07	$0.08	$0.10
Δ Working Capital * (1-δ)	$0.27	$0.31	$0.37	$0.43	$0.50
FCFE	$0.34	$0.39	$0.46	$0.54	$0.63
Present Value	$0.29	$0.30	$0.30	$0.31	$0.31

Transition Period (up to ten years)

Year	**6**	**7**	**8**	**9**	**10**
Growth Rate	14.60%	12.20%	9.80%	7.40%	5.00%
Cumulated Growth	14.60%	28.58%	41.18%	51.63%	59.21%
Earnings	$1.41	$1.58	$1.73	$1.86	$1.95
(CapEx-Deprec'n) * (1-δ)	$0.11	$0.13	$0.14	$0.15	$0.16
Δ Working Capital * (1-δ)	$0.45	$0.39	$0.30	$0.22	$0.13
FCFE	$0.84	$1.07	$1.29	$1.50	$1.67
Beta	1.45	1.45	1.45	1.45	1.45
Cost of Equity	14.98%	14.98%	14.98%	14.98%	14.98%
Present Value	$0.36	$0.40	$0.42	$0.43	$0.41
End-of-Life Index					1

Stable Growth Phase
Growth Rate in Stable Phase = 5.00%
FCFE in Terminal Year = $1.92
Cost Of Equity in Stable Phase = 14.98%
Price at End of Growth Phase = $19.19
PV of FCFE In High Growth Phase = $1.51
Present Value of FCFE in Transition Phase = $2.03

Present Value of Terminal Price = $4.75
Value of the Stock = $8.29

23-11
a.

Year	1	2	3	4	5
Earnings	$1.02	$1.22	$1.47	$1.76	$2.12
(CapEx-Deprec'n)*(1-δ)	$0.00	$0.00	$0.00	$0.00	$0.00
Δ Working Capital *(1-δ)	$0.85	$1.02	$1.22	$1.47	$1.76
FCFE	$0.17	$0.20	$0.24	$0.29	$0.35
Present Value	$0.15	$0.16	$0.17	$0.18	$0.19

Transition Period (up to ten years)

Year	6	7	8
Growth Rate	15.00%	10.00%	5.00%
Cumulated Growth	15.00%	26.50%	32.83%
Earnings	$2.43	$2.68	$2.81
(CapEx-Deprec'n)*(1-δ)		$0.00	$0.00
Δ Working Capital *(1-δ)	$1.59	$1.22	$0.67
FCFE	$0.85	$1.46	$2.14
Beta	1.1	1.1	1.1
Cost of Equity	13.05%	13.05%	13.05%
Present Value	$0.41	$0.62	$0.80
End-of-Life Index			1

Stable Growth Phase
Growth Rate in Stable Phase = 5.00%
FCFE in Terminal Year = $2.25
Cost of Equity in Stable Phase = 13.05%
Price at the End of Growth Phase = $27.92
PV of FCFE in High Growth Phase = $0.85
Present Value of FCFE in Transition Phase = $1.83
Present Value of Terminal Price = $10.46
Value of the Stock = $13.14

b. It is impossible to say. Easier credit terms will increase working capital as a percentage of revenues, and thus act as a drain on cash flows. On the other hand, the higher growth in revenues and earnings will create a positive effect. The net effect can be either positive or negative.

c.

WC as % of Revenues	Value Per Share
60%	$8.62
50%	$10.88
40%	$13.14
30%	$15.40
20%	$17.66

This assumes that there is no change in expected growth, as a consequence.

23-12

a. Both models should have the same value, as long as a higher growth rate in earnings is used in the dividend discount model to reflect the growth created by the interest earned, and a lower beta is used to reflect the reduction in risk.

b. The dividend discount model will overstate the true value, because it will not reflect the dilution that is inherent in the issue of new stock.

c. Both models should provide the same value.

d. Since acquisition, with the intent of diversifying, implies that the firm is paying too much (i.e., negative net present value), the dividend discount model will provide a lower value than the FCFE model.

e. If the firm is over-levered to begin with, and borrows more money, there will be a loss of value from the over-leverage. The FCFE model will reflect this lost value, and will thus provide a lower estimate of value than the dividend discount model.

23-13

a. FCFF in 1993 = Net Income + Depreciation - Capital Expenditures - £GWorking Capital +
Interest Expenses (1 - tax rate) = $770 + $960 - $1,200 - 0 + $320 (1 - 0.36) = $734.80 million

b. EBIT = Net Income/(1 - tax rate) + Interest Expenses = $1,523.125 million
Return on Assets = EBIT (1-t)/ (BV of Debt + BV of Equity) = 10.83%
Expected Growth Rate in FCFF = Retention Ratio * ROA = 6.50%
Cost of Equity = 7% + 1.05 * 5.5% = 12.775%
Cost of Capital = 8% (1 - 0.36) (4,000/(4,000 + 12,000)) + 12.775% (12,000/(4,000 + 12,000))
= 10.86%
Value of the Firm = 734.80/(.1086 - .065) = $16,853 million

c. Value of Equity = Value of Firm - Market Value of Debt = $16,853 - $4,000 = $12,853 millions
Value Per Share = $12,853/200 = $64.27

23-14

a.

a., b. From the information given, we can compute the following:

Yr	EBITDA	Deprec'n	EBIT	EBIT (1-t)	Cap Exp.	Δ WC	FCFF	Terminal Value
0	$1,290	$400	$890	$534	$450	$82	$402	
1	$1,413	$438	$975	$585	$493	$90	$440	
2	$1,547	$480	$1,067	$640	$540	$98	$482	
3	$1,694	$525	$1,169	$701	$591	$108	$528	
4	$1,855	$575	$1,280	$768	$647	$118	$578	
5	$2,031	$630	$1,401	$841	$708	$129	$633	$14,326
Terminal Yr	$2,112	$655	$1,457	$875	$655	$60	$815	

The WACC in 1993 can be computed as 9.37%, using the cost of equity of 13.05% based on the current beta of 1.1.
Given the current beta and the current D/E ratio of 3200/3968, the unlevered beta = 0.74. If we assume that the operations of the firm do not change until after 1988, we can infer that the WACC for the firm is constant until 1998. After 1998, the stock beta changes to 0.74(1+(1-0.4)0.5) = 0.96 implying a cost of equity of 12.29% for 1999 and beyond. This is turn can be used to compute a WACC of 9.69%.

WACC after year 5 = 12.29% (2/3) + 7.5% (1-.4) (1/3) = 9.69%

We can discount the FCFF to the firm from 1994 to 1998 at the WACC of 9.37, and thereafter at the rate of 9.69%. This yields the following:

Value of the Firm = $440/1.0937 + 482/1.0937^2 + 528/1.0937^3 + 578/1.0937^4 + (633 + 14957)/1.0937^5 = \$11,172$

b. Value of Equity in the Firm = ($11172 - Market Value of Debt) = 11172 - 3200 =$7,972

Value Per Share = $7972/62 = $128.57

23-15

a. Beta for the Health Division = 1.15
Cost of Equity = 7% + 1.15 * 5.5% = 13.33%
Cost of Capital = 13.33% * 0.80 + (7.5% * 0.6) * 0.2 = 11.56%

b.

Year	**Deprec'n**	**EBIT**	**EBIT(1-t)**	**Cap Ex**	**FCFF**	**Term Value**
0	$350	$560	$336	$420	$266	
1	$364	$594	$356	$437	$283	
2	$379	$629	$378	$454	$302	
3	$394	$667	$400	$472	$321	
4	$409	$707	$424	$491	$342	

5	$426	$749	$450	$511	$364	$5,014

Now after 5 years:
Cost of Equity = 13.33%
Cost of Debt = 4.50%
Cost of Capital = 11.56%
Value of the Division = 283/1.1156 + 302/1.11562 + 321/1.11563 + 342/1.11564 + (364 + 5,014)/1.11565 = $4,062 millions

c. There might be potential for synergy, with an acquirer with related businesses. The health division at Kodak might also be mismanaged, creating the potential for additional value from better management.

23-16
a. Payout Ratio = 1.06/$2.40 = 44.17 %
Expected Growth Rate = 6%
Cost of Equity = 7% + 1.05 * 5.5% = 12.775%
P/E Ratio = 0.4417 * 1.06/(.12775 - .06) = 6.91

b. The stock is trading at ten times earnings.
P/E Ratio = 10 = 0.4417 (1+g)/(.12775-g)
Solving for g in this equation,
g = (1.2775 - 0.4417)/10.4417 = 8%

23-17
a. Average P/E Ratio for the Industry = 13.2
Median P/E Ratio for the Industry = 12.25
If the firms in this group are homogeneous, the average P/E ratio provides an estimate of how much the market values earnings in this sector, given the expected growth potential and the risk in the sector.
The average P/E ratio can be skewed by extreme values (since P/E cannot be less than zero). The median corrects for this by looking at the median firm in the sector.

b. This statement is likely to be true only if
(1) Thiokol has the same growth prospects and risk profile of the typical firm in the industry. It also generates cash flows for disbursement as dividends which are similar to the typical firm in the industry.
(2) Thiokol has higher growth potential and/or lower risk than the typical firm in the industry.

c. The regression of P/E ratios on fundamentals yields the following:
P/E = -2.33 + 35.74 Growth Rate + 11.97 Beta + 2.90 Payout Ratio
R^2 = 0.4068
The following table provides predicted P/E ratios for the firms in the group:

	Actual P/E	Predicted P/E	Difference
Boeing	17.3	12.9	4.4
General Dynamics	15.5	17.9	-2.4
GM- Hughes	16.5	13.68	2.82
Grumman	11.4	12.07	-0.67
Lockheed Corp.	10.2	12.31	-2.11
Logicon	12.4	13.17	-0.77
Loral Corporation	13.3	13.21	0.09
Martin Marietta	11	11.34	-0.34
McDonnell Doug.	22.6	17.15	5.45
Northrop	9.5	14.82	-5.32
Raytheon	12.1	10.85	1.25
Rockwell	13.9	14.85	-0.95
Thiokol	8.7	11.44	-2.74
United Industrial	10.4	9.11	1.29

Again, negative numbers indicate that the stock is undervalued.
The problem with a regression like this one is that it has relatively few observations and is likely to be thrown off by a few extreme observations.

23-18

a. Dividend Payout Ratio = $2/$4 = 50%
Return on Equity = $4/$40 = 10%
Cost of Equity = 7% +0.85 * 5.5% = 11.68%
Expected Growth Rate = 6%
Price/Book Value Ratio = (.1) (.5)(1.06)/(.1168 - .06) = 0.93
b. If the P/BV ratio is 1.5, then 1.5 = ROE (.5) (1.06)/(.1168 - .06),
Solving for ROE = 16.08%

23-19

a.

Company	Price	BV/ Share	P/BV	Beta	Exp. Growth	Payout	ROE
Air & Water	$9.60	$8.48	1.13	1.65	10.50%	0.00%	4.72%
Allwaste	$5.40	$3.10	1.74	1.1	18.50%	0.00%	8.06%
Browning Ferris	$29.00	$11.50	2.52	1.25	11.00%	46.90%	12.61%
Chemical Waste	$9.40	$3.75	2.51	1.15	2.50%	33.33%	12.00%
Ground-water	$15.00	$14.45	1.04	1	3.00%	0.00%	4.50%
Intern'l Tech.	$3.30	$3.35	0.99	1.1	11.00%	0.00%	4.78%
Ionics Inc.	$48.00	$31.00	1.55	1	14.50%	0.00%	7.10%
Laidlaw Inc.	$6.30	$5.85	1.08	1.15	8.50%	30.00%	6.84%
OHM Corp.	$16.00	$5.65	2.83	1.15	9.50%	0.00%	10.62%
Rollins	$5.10	$3.65	1.4	1.3	1.00%	0.00%	1.37%

Safety-Kleen	$14.00	$9.25	1.51	1.15	6.50%	45.00%	8.65%
AVERAGE			1.66	1.18	8.77%	14.11%	7.39%

Dividend Payout = DPS/EPS
ROE = EPS/ BV of Equity
The average price/book value ratio of these firms is 1.66, based on the following:
(1) These firms have, on average, a lower growth rate than the firm being valued.
(2) The firm being valued has more free cash flows available for paying dividends than the average firm in the sector.
(3) The firm is unlevered. It should therefore have a lower beta.

b. On all three counts, a higher price/book value ratio should be used for this company.

23-20
a. Dividend Payout Ratio = $1.12/$2.45 = 0.46
Expected Growth Rate = 6%
Cost of Equity = 7% + 0.9 (5.5%) = 11.95%
Profit Margin = 2.45/122 = 2%
P/S Ratio = .02 * 0.4571 * (1.06)/(.1195 - .06) = 0.16
Price Based on this Multiple = 0.16288 * 122 = $19.87

b. P/S Ratio Needed for a Price of $34 = $34/122 = 0.28
Profit Margin Needed for this P/S Ratio = 0.0342 or 3.42%

23-21
No. One would explain its high price to sales ratio by pointing to the combination of a high profit margin and a moderate growth rate.
P/S = -0.79 + 11.50 Profit Margin + 0.60 Payout + 1.50 Growth + 0.51 Beta
Walgreen's predicted P/S ratio would be:
P/S = -0.79 + 11.50 (0.027) + 0.60 (.31) + 1.50 (.135) + 0.51 (1.15) = 0.50