

Answers to End-of-Chapter Problems

We present here some intermediate steps and final answers to selected end-of-chapter problems. Please note that your answer may differ slightly from ours because of rounding differences. Also, although we hope not, some of the problems may have more than one correct solution, depending on what assumptions are made when working the problem. Finally, many of the problems involve some verbal discussion as well as numerical calculations; this verbal material is not presented here.

- 2-1 5.8%.
 2-2 25%.
 2-3 \$1,000,000.
 2-4 \$2,500,000.
 2-5 \$3,600,000.
 2-6 \$20,000,000.
 2-7 Tax = \$107,855;
 NI = \$222,145;
 Marginal tax rate = 39%;
 Average tax rate = 33.8%.
 2-8 a. Tax = \$3,575,000.
 b. Tax = \$350,000.
 c. Tax = \$105,000.
 2-9 AT&T bond = 4.875%;
 AT&T preferred stock = 5.37%;
 Florida bond = 5%.
 2-10 NI = \$450,000;
 NCF = \$650,000.
 2-11 a. \$2,400,000.
 b. NI = \$0;
 NCF = \$3,000,000.
 c. NI = \$1,350,000;
 NCF = \$2,100,000.
 2-12 a. NOPAT = \$756 million.
 b. NOWC₀₉ = \$3.0 billion;
 NOWC₁₀ = \$3.3 billion.
 c. Op. capital₀₉ = \$6.5 billion;
 Op. capital₁₀ = \$7.15 billion.
 d. FCF = \$106 million.
 e. ROIC = 10.57%.
 f. Answers in millions:
 A-T int. = \$72.
 Inc. in debt = -\$284.
 Div. = \$220.
 Rep. stock = \$88.
 Purch. ST inv. = \$10.
 2-13 Refund = \$120,000.
 Future taxes = \$0; \$0;
 \$40,000; \$60,000; \$60,000.
 3-1 AR = \$400,000.
 3-2 D/A = 60%.
 3-3 M/B = 10.
 3-4 P/E = 16.0.
 3-5 ROE = 12%.
 3-6 S/TA = 5; TA/E = 1.5.
 3-7 CL = \$2,000,000;
 Inv = \$1,000,000.
 3-8 Net profit margin = 2%;
 D/A = 40%.
 3-9 \$262,500; 1.19.
 3-10 TIE = 3.86.
 3-11 A/P = \$90,000;
 Inv. = \$90,000;
 FA = \$138,000.
 3-12 Sales = \$2,592,000;
 DSO = 36.33 days.
 3-13 a. Current ratio = 1.98;
 DSO = 76 days;
 TA turnover = 1.7;
 Debt ratio = 61.9%.
 3-14 a. Quick ratio = 0.8;
 DSO = 37 days;
 ROE = 13.1%;
 Debt ratio = 54.8%.
 4-1 FV₅ = \$16,105.10.
 4-2 PV = \$1,292.10.
 4-3 I/YR = 8.01%.
 4-4 N = 11.01 years.
 4-5 N = 11 years.
 4-6 FVA₅ = \$1,725.22;
 FVA_{5 Due} = \$1,845.99.

- 4-7 PV = \$923.98;
FV = \$1,466.24.
- 4-8 PMT = \$444.89;
EAR = 12.6825%.
- 4-9 a. \$530.
b. \$561.80.
c. \$471.70.
d. \$445.00.
- 4-10 a. \$895.42.
b. \$1,552.92.
c. \$279.20.
d. \$160.99.
- 4-11 a. $N = 10.24 \approx 10$ years.
b. $N = 7.27 \approx 7$ years.
c. $N = 4.19 \approx 4$ years.
d. $N = 1.00 \approx 1$ year.
- 4-12 a. \$6,374.97.
b. \$1,105.13.
c. \$2,000.00.
d. (1) \$7,012.46.
(2) \$1,160.38.
(3) \$2,000.00.
- 4-13 a. \$2,457.83.
b. \$865.90.
c. \$2,000.00.
d. (1) \$2,703.61.
(2) \$909.19.
(3) \$2,000.00.
- 4-14 a. $PV_A = \$1,251.25$.
 $PV_B = \$1,300.32$.
b. $PV_A = \$1,600$.
 $PV_B = \$1,600$.
- 4-15 a. 7%.
b. 7%.
c. 9%.
d. 15%.
- 4-16 a. \$881.17.
b. \$895.42.
c. \$903.06.
d. \$908.35.
- 4-17 a. \$279.20.
b. \$276.84.
c. \$443.72.
- 4-18 a. \$5,272.32.
b. \$5,374.07.
- 4-19 a. Universal, EAR = 7%;
Regional, EAR = 6.14%.
- 4-20 a. PMT = \$6,594.94;
Interest₁ = \$2,500;
Interest₂ = \$2,090.51.
b. \$13,189.87.
c. \$8,137.27.
- 4-21 a. $I = 14.87\% \approx 15\%$.
- 4-22 $I = 7.18\%$.
- 4-23 $I = 9\%$.
- 4-24 a. \$33,872.11.
b. (1) \$26,243.16.
(2) \$0.
- 4-25 $N = 14.77 \approx 15$ years.
- 4-26 6 years; \$1,106.01.
- 4-27 (1) \$1,428.57.
(2) \$714.29.
- 4-28 \$893.26.
- 4-29 \$984.88.
- 4-30 57.18%.
- 4-31 a. \$1,432.02.
b. \$93.07.
- 4-32 $I_{\text{NOM}} = 15.19\%$.
- 4-33 PMT = \$36,949.61.
- 4-34 First PMT = \$9,736.96.
- 5-1 \$928.39.
- 5-2 12.48%.
- 5-3 8.55%.
- 5-4 7%; 7.33%.
- 5-5 2.5%.
- 5-6 0.3%.
- 5-7 \$1,085.80.
- 5-8 YTM = 6.62%;
YTC = 6.49%.
- 5-9 a. 5%: $V_L = \$1,518.98$;
 $V_S = \$1,047.62$.
8%: $V_L = \$1,171.19$;
 $V_S = \$1,018.52$.
12%: $V_L = \$863.78$;
 $V_S = \$982.14$.
- 5-10 a. YTM at \$829 = 13.98%;
YTM at \$1,104 = 6.50%.
- 5-11 14.82%.
- 5-12 a. 10.37%.
b. 10.91%.
- c. -0.54%.
d. 10.15%.
- 5-13 8.65%.
- 5-14 10.78%.
- 5-15 YTC = 6.47%.
- 5-16 a. 10-year, 10% coupon =
6.75%;
10-year zero = 9.75%;
5-year zero = 4.76%;
30-year zero = 32.19%;
\$100 perpetuity = 14.29%.
- 5-17 $C_0 = \$1,012.79$;
 $Z_0 = \$693.04$;
 $C_1 = \$1,010.02$;
 $Z_1 = \$759.57$;
 $C_2 = \$1,006.98$;
 $Z_2 = \$832.49$;
 $C_3 = \$1,003.65$;
 $Z_3 = \$912.41$;
 $C_4 = \$1,000.00$;
 $Z_4 = \$1,000.00$.
- 5-18 5.8%.
- 5-19 1.5%.
- 5-20 6.0%.
- 5-21 a. \$1,251.22.
b. \$898.94.
- 5-22 a. 8.02%.
b. 7.59%.
- 5-23 a. $r_1 = 9.20\%$; $r_5 = 7.20\%$.
- 6-1 $b = 1.12$.
- 6-2 $r_s = 10.90\%$.
- 6-3 $r_M = 11\%$; $r_s = 12.2\%$.
- 6-4 $\hat{r} = 11.40\%$; $\sigma = 26.69\%$;
CV = 2.34.
- 6-5 a. $\hat{r}_M = 13.5\%$; $\hat{r}_j = 11.6\%$.
b. $\sigma_M = 3.85\%$; $\sigma_j = 6.22\%$.
c. $CV_M = 0.29$; $CV_j = 0.54$.
- 6-6 a. $b_A = 1.40$.
b. $r_A = 15\%$.
- 6-7 a. $r_i = 15.5\%$.
b. (1) $r_M = 15\%$; $r_i = 16.5\%$.
(2) $r_M = 13\%$; $r_i = 14.5\%$.
c. (1) $r_i = 18.1\%$.
(2) $r_i = 14.2\%$.
- 6-8 $b_N = 1.16$.

- 6-9 $b_p = 0.7625$; $r_p = 12.1\%$.
- 6-10 $b_N = 1.1250$.
- 6-11 4.5%.
- 6-12 a. $\bar{r}_A = 11.30\%$;
 $\bar{r}_B = 11.30\%$.
 b. $\bar{r}_P = 11.30\%$.
 c. $\sigma_A = 20.8\%$; $\sigma_B = 20.8\%$;
 $\sigma_P = 20.1\%$;
 d. $CV_A = 1.84$; $CV_B = 1.84$; $CV_P = 1.78$.
- 6-13 a. $b_X = 1.3471$;
 $b_Y = 0.6508$.
 b. $r_X = 12.7355\%$;
 $r_Y = 9.254\%$.
 c. $r_p = 12.04\%$.
- 7-1 $D_1 = \$1.5750$;
 $D_3 = \$1.7364$;
 $D_5 = \$2.1011$.
- 7-2 $\hat{P}_0 = \$18.75$.
- 7-3 $\hat{P}_1 = \$22.00$; $\hat{r}_s = 15.50\%$.
- 7-4 $r_{ps} = 10\%$.
- 7-5 \$50.50.
- 7-6 $g = 9\%$.
- 7-7 $\hat{P}_3 = \$27.32$.
- 7-8 a. 13.3%.
 b. 10%.
 c. 8%.
 d. 5.7%.
- 7-9 \$25.26.
- 7-10 a. $r_C = 10.6\%$; $r_D = 7\%$.
- 7-11 \$25.03.
- 7-12 $\hat{P}_0 = \$19.89$.
- 7-13 a. \$125.
 b. \$83.33.
- 7-14 a. 7%.
 b. 5%.
 c. 12%.
- 7-15 a. (1) \$9.50.
 (2) \$13.33.
 b. (1) Undefined.
- 7-16 a. $\hat{P}_0 = \$21.43$.
 b. $\hat{P}_0 = \$26.47$.
- c. $\hat{P}_0 = \$32.14$.
 d. $\hat{P}_0 = \$40.54$.
- 7-17 b. $PV = \$5.29$.
 d. \$30.01.
- 7-18 a. $D_5 = \$3.52$.
 b. $\hat{P}_0 = \$39.42$.
 c. $D_1/P_0 = 5.10\%$;
 $D_6/P_5 = 7.00\%$.
- 7-19 $\hat{P}_0 = \$54.11$.
- 8-1 \$5; \$2.
- 8-2 \$27.00; \$37.00.
- 8-3 \$1.67.
- 8-4 \$3.70.
- 8-5 \$1.90.
- 8-6 \$2.39.
- 8-7 \$1.91.
- 9-1 a. 13%.
 b. 10.4%.
 c. 8.45%.
- 9-2 5.2%.
- 9-3 9%.
- 9-4 5.41%.
- 9-5 13.33%.
- 9-6 10.4%.
- 9-7 9.17%.
- 9-8 13%.
- 9-9 7.2%.
- 9-10 a. 16.3%.
 b. 15.4%.
 c. 16%.
- 9-11 a. 8%.
 b. \$2.81.
 c. 15.81%.
- 9-12 a. $g = 3\%$.
 b. $EPS_1 = \$5.562$.
- 9-13 16.1%.
- 9-14 $(1 - T)r_d = 5.57\%$.
- 9-15 a. \$15,000,000.
 b. 8.4%.
- 9-16 Short-term debt = 11.14%;
 Long-term debt = 22.03%;
 Common equity = 66.83%.
- 9-17 $w_{d(\text{Short})} = 0\%$; $w_{d(\text{Long})} = 20\%$;
 $w_{ps} = 4\%$; $w_s = 76\%$;
 $r_d(\text{After-tax}) = 7.2\%$;
 $r_{ps} = 11.6\%$; $r_s \approx 17.5\%$.
- 10-1 NPV = \$7,486.68.
- 10-2 IRR = 16%.
- 10-3 MIRR = 13.89%.
- 10-4 PI = 1.14.
- 10-5 4.34 years.
- 10-6 6.51 years.
- 10-7 5%: $NPV_A = \$16,108,952$;
 $NPV_B = \$18,300,939$.
 10%: $NPV_A = \$12,836,213$;
 $NPV_B = \$15,954,170$.
 15%: $NPV_A = \$10,059,587$;
 $NPV_B = \$13,897,838$.
- 10-8 $NPV_T = \$409$; $IRR_T = 15\%$;
 $MIRR_T = 14.54\%$; Accept.
 $NPV_P = \$3,318$;
 $IRR_P = 20\%$;
 $MIRR_P = 17.19\%$; Accept.
- 10-9 $NPV_E = \$3,861$;
 $IRR_E = 18\%$;
 $NPV_G = \$3,057$;
 $IRR_G = 18\%$;
 Purchase electric-powered forklift, since it has a higher NPV.
- 10-10 $NPV_S = \$814.33$;
 $NPV_L = \$1,675.34$;
 $IRR_S = 15.24\%$;
 $IRR_L = 14.67\%$;
 $MIRR_S = 13.77\%$;
 $MIRR_L = 13.46\%$;
 $PI_S = 1.081$; $PI_L = 1.067$.
- 10-11 $MIRR_X = 13.59\%$;
 $MIRR_Y = 13.10\%$.
- 10-12 a. NPV = \$136,578;
 IRR = 19.22%.
- 10-13 b. $IRR_A = 18.1\%$;
 $IRR_B = 24.0\%$.

- c. 10%: $PV_A = \$283.34$;
 $NPV_B = \$178.60$.
 17%: $PV_A = \$31.05$;
 $NPV_B = \$75.95$.
- d. (1) $MIRR_A = 14.07\%$;
 $MIRR_B = 15.89\%$.
 (2) $MIRR_A = 17.57\%$;
 $MIRR_B = 19.91\%$.
- 10-14** a. $\$0$; $-\$10,250,000$;
 $\$1,750,000$.
 b. 16.07%.
- 10-15** a. $NPV_A = \$18,108,510$;
 $NPV_B = \$13,946,117$;
 $IRR_A = 15.03\%$; $IRR_B = 22.26\%$.
 b. $NPV_A = \$4,162,393$;
 $IRR_A = 11.71\%$.
- 10-16** Extended $NPV_A = \$12.76$ million;
 Extended $NPV_B = \$9.26$ million.
 $EAA_A = \$2.26$ million;
 $EAA_B = \$1.64$ million.
- 10-17** Extended $NPV_A = \$4.51$ million.
 $EAA_A = \$0.85$ million;
 $EAA_B = \$0.69$ million.
- 10-18** NPV of 360-6 = $\$22,256$.
 Extended NPV of 190-3 = $\$20,070$.
 EAA of 360-6 = $\$5,723.30$;
 EAA of 190-3 = $\$5,161.02$.
- 10-19** d. 7.61%; 15.58%.
- 10-20** a. Undefined.
 b. $NPV_C = -\$911,067$;
 $NPV_F = -\$838,834$.
- 10-21** a. A = 2.67 years;
 B = 1.5 years.
 b. A = 3.07 years;
 B = 1.825 years.
 c. $NPV_A = \$12,739,908$;
 Choose both.
 d. $NPV_A = \$18,243,813$;
 Choose A.
 e. $NPV_B = \$8,643,390$;
 Choose B.
 f. 13.53%.
 g. $MIRR_A = 21.93\%$;
 $MIRR_B = 20.96\%$.
- 10-22** a. 3 years.
 b. No.
- 11-1** a. $\$12,000,000$.
 b. No.
 c. Yes; add $\$1$ million to initial investment outlay.
- 11-2** $\$2,600,000$.
- 11-3** $\$4,600,000$.
- 11-4** $NPV = \$15,301.10$
- 11-5** a. SL: $\$200,000$ per year.
 MACRS: $\$264,000$;
 $\$360,000$; $\$120,000$;
 $\$56,000$.
 b. MACRS, $\$12,781.64$ higher.
- 11-6** a. $-\$126,000$.
 b. $\$42,518$; $\$47,579$;
 $\$34,926$.
 c. $\$50,702$.
 d. $NPV = \$10,841$;
 Purchase.
- 11-7** a. $-\$89,000$
 b. $\$26,220$; $\$30,300$;
 $\$20,100$.
 c. $\$24,380$.
 d. $NPV = -\$6,704$;
 Don't purchase.
- 11-8** a. $NPV = \$106,537$.
- 11-9** NPV of replace = $\$921$.
- 11-10** NPV of replace = $\$22,329$.
- 11-11** $E(NPV) = \$3$ million;
 $\sigma_{NPV} = \$23.622$ million;
 $CV_{NPV} = 7.874$.
- 11-12** a. $NPV = \$37,035.13$;
 $IRR = 15.30\%$;
 $MIRR = 12.81\%$;
 Payback = 3.33 years.
 b. $\$77,976$; $-\$3,905$.
 c. $E(NPV) = \$34,800$;
 $\sigma_{NPV} = \$35,968$;
 $CV = 1.03$.
- 11-13** a. $-\$98,500$.
- b. $\$46,675$; $\$52,975$;
 $\$37,225$; $\$33,025$;
 $\$22,850$.
 c. $\$34,073$.
- 11-14** a. $-\$792,750$.
 b. $\$115,000$; $\$256,000$;
 $\$103,250$; $\$21,000$;
 $\$9,250$.
 c. $\$206,000$; $\$255,350$;
 $\$201,888$; $\$173,100$;
 $\$287,913$.
 d. $NPV = \$11,820$.
- 11-15** a. Expected $CF_A = \$6,750$;
 Expected $CF_B = \$7,650$;
 $CV_A = 0.0703$.
 b. $NPV_A = \$10,036$;
 $NPV_B = \$11,624$.
- 11-16** a. $E(IRR) \approx 15.3\%$.
 b. $\$38,589$.
- 11-17** a. $\$117,779$.
 b. $\sigma_{NPV} = \$445,060$;
 $CV_{NPV} = 3.78$.
- 12-1** $AFN = \$410,000$.
- 12-2** $AFN = \$610,000$.
- 12-3** $AFN = \$200,000$.
- 12-4** $\Delta S = \$68,965.52$.
- 12-5** a. $\$105,000$; $\$480,000$.
 b. $\$18,750$.
- 12-6** $AFN = \$360$.
- 12-7** a. $\$13.44$ million.
 b. 6.38%.
 c. Notes payable = $\$31.44$ million.
- 12-8** a. Total assets = $\$33,534$;
 $AFN = \$2,128$.
 b. Notes payable = $\$4,228$.
- 12-9** a. $AFN = \$128,783$.
 b. Notes payable = $\$284,783$.
- 13-1** $FCF = \$37.0$.
- 13-2** $V_{op} = \$6,000,000$.

- 13-3 V_{op} at 2010 = \$15,000.
- 13-4 V_{op} = \$160,000,000;
MVA = -\$40,000,000.
- 13-5 \$259,375,000.
- 13-6 a. HV_2 = \$2,700,000.
b. \$2,303,571.43.
- 13-7 a. \$713.33.
b. \$527.89.
c. \$43.79.
- 13-8 \$416 million.
- 13-9 \$46.90.
- 13-10 a. \$34.96 million.
b. \$741.152 million.
c. \$699.20 million.
d. \$749.10 million.
e. \$50.34.
- 14-1 Payout = 55%.
- 14-2 Payout = 20%.
- 14-3 Payout = 52%.
- 14-4 V_{op} = \$175 million;
 n = 8.75 million.
- 14-5 P_0 = \$60.
- 14-6 \$3,250,000.
- 14-7 n = 4,000; EPS = \$5.00;
DPS = \$1.50; P = \$40.00.
- 14-8 D_0 = \$3.44.
- 14-9 Payout = 31.39%.
- 14-10 a. (1) \$3,960,000.
(2) \$4,800,000.
(3) \$9,360,000.
(4) Regular = \$3,960,000;
Extra = \$5,400,000.
- 14-11 a. \$6,000,000.
b. DPS = \$2.00; Payout = 25%.
c. \$5,000,000.
d. No.
e. 50%.
f. \$1,000,000.
g. \$8,333,333.
- 14-12 a. \$848 million.
b. \$450 million.
- c. \$30.
d. 1 million; 14 million.
e. \$420 million; \$30.
- 15-1 20,000.
- 15-2 1.0.
- 15-3 3.6%.
- 15-4 \$300 million.
- 15-5 \$30.
- 15-6 40 million.
- 15-7 a. Δ Profit = \$850,000;
Return = 21.25% > r_s
= 15%.
b. $Q_{BE,Old}$ = 40;
 $Q_{BE,New}$ = 45.45.
- 15-8 a. V = \$3,348,214.
b. \$16.74.
c. \$1.84.
d. 10%.
- 15-9 30% debt:
WACC = 11.14%;
 V = \$101.023 million.
50% debt:
WACC = 11.25%;
 V = \$100 million.
70% debt:
WACC = 11.94%;
 V = \$94.255 million.
- 15-10 a. 0.870.
b. b = 1.218;
 r_s = 10.872%.
c. WACC = 8.683%;
 V = \$103.188 million.
- 15-11 11.45%.
- 16-1 \$3,000,000.
- 16-2 AR = \$59,500.
- 16-3 r_{NOM} = 75.26%;
EAR = 109.84%.
- 16-4 EAR = 8.49%.
- 16-5 \$7,500,000.
- 16-6 a. DSO = 28 days.
- b. AR = \$70,000.
c. AR = \$55,000.
- 16-7 a. 73.74%.
b. 14.90%.
c. 32.25%.
d. 21.28%.
e. 29.80%.
- 16-8 a. 45.15%.
- 16-9 Nominal cost = 14.90%;
Effective cost = 15.89%.
- 16-10 14.91%.
- 16-11 a. 68 days.
b. \$356,250.
c. 8.1.
- 16-12 a. 56.5 days.
b. (1) 2.1429.
(2) 12.86%.
c. (1) 46.5 days.
(2) 2.25.
(3) 13.5%.
- 16-13 a. ROE_T = 11.75%;
 ROE_M = 10.80%;
 ROE_R = 9.16%.
- 16-14 a. Feb. surplus = \$2,000.
b. \$164,400.
- 16-15 a. \$100,000.
c. (1) \$300,000.
(2) Nominal cost = 37.24%;
Effective cost = 44.59%.
d. Nominal cost = 24.83%;
Effective cost = 27.86%.
- 16-16 a. 14.35%.
- 16-17 a. \$300,000.
b. \$2,000.
c. (1) \$322,500.
(2) \$26,875.
(3) 13.57%.
(4) 14.44%.
- 17-1 12.358 yen per peso.
- 17-2 f_t = \$0.00907.

- 17-3 1 euro = \$0.9091 or
\$1 = 1.1 euros.
- 17-4 0.6667 pounds per dollar.
- 17-5 1.5152 SFr.
- 17-6 2.4 Swiss francs per pound.
- 17-7 $r_{\text{NOM-U.S.}} = 4.6\%$.
- 17-8 117 pesos.
- 17-9 +\$250,000.
- 17-10 b. \$18,148.00.
- 17-11 a. \$1,659,000.
b. \$1,646,000.
c. \$2,000,000.
- 17-12 b. $f_t = \$0.7994$.
- 17-13 \$468,837,209.
- 17-14 a. \$52.63; 20%.
b. 1.5785 SFr per U.S. dollar.
c. 41.54 Swiss francs; 16.92%.
- 18-1 a. (1) 50%.
(2) 60%.
(3) 50%.
- 18-2 Cost of owning = -\$127;
Cost of leasing = -\$128.
- 18-3 a. Energen: Debt/TA = 50%;
Hastings: Debt/TA = 33%.
b. TA = \$200.
- 18-4 a. NAL = \$108,048.
- 18-5 a. Cost of leasing = \$637,692;
Cost of owning = \$713,242.
- 19-1 \$196.36.
- 19-2 25 shares.
- 19-3 a. (1) -\$5, or \$0.
(2) \$0.
(3) \$5.
(4) \$75.
b. 10%; \$100.
- 19-4 Premium = 10%: \$46.20;
Premium = 30%: \$54.60.
- 19-5 a. 14.1%.
b. \$12 million before tax.
- c. \$331.89.
- d. Value as a straight bond = \$699.25;
Value in conversion = \$521.91.
- f. Value as a straight bond = \$1,000.00;
Value in conversion = \$521.91.
- 19-6 b. Plan 1, 49%;
Plan 2, 53%;
Plan 3, 53%.
c. Plan 1, \$0.59;
Plan 2, \$0.64;
Plan 3, \$0.88.
d. Plan 1, 19%;
Plan 2, 19%;
Plan 3, 50%.
- 19-7 a. Year = 7;
 $CV_7 = \$1,210.422$;
 $CF_7 = \$1,290.422$.
b. 10.20%.
- 20-1 a. \$700,000.
b. \$3,700,000.
c. -\$2,300,000.
- 20-2 964,115 shares.
- 20-3 a. 2010: \$12,000; \$6,000;
\$90,000.
b. Edelman: $g_{\text{EPS}} = 8.0\%$;
 $g_{\text{DPS}} = 7.4\%$.
e. 2010: \$3.00; \$1.50;
\$22.50.
f. Kennedy, 15.00%;
Strasburg, 13.64%.
g. 2010: Kennedy, 50%;
Strasburg, 50%.
h. Kennedy, 43%;
Strasburg, 37%.
i. Kennedy, 8;
Strasburg, 8.67.
- 20-4 a. After-tax call cost = \$2,640,000.
b. Flotation cost = \$1,600,000.
c. \$1,920,000;
\$768,000.
d. \$3,472,000.
e. New tax savings = \$16,000;
- Lost tax savings = \$19,200.
- f. \$360,000.
- g. PV = \$9,109,413.
- h. \$5,637,413.
- 20-5 a. NPV = \$2,717,128.
- 21-1 $P_0 = \$25.26$.
- 21-2 $P_0 = \$41.54$.
- 21-3 \$25.26 to \$41.54.
- 21-4 Value of equity = \$46.30 million.
- 21-5 a. $V_{\text{op Unlevered}} = \32.02 million;
 $V_{\text{Tax shields}} = \11.50 million.
b. $V_{\text{op}} = \$43.52$ million;
max = \$33.52 million.
- 21-6 a. 10.96%.
b. (All in millions) $FCF_1 = \$23.12$,
 $TS_1 = \$14.00$;
 $FCF_3 = \$12.26$,
 $TS_3 = \$16.45$;
 $FCF_5 = \$23.83$,
 $TS_5 = \$18.90$.
c. $HV_{\text{TS}} = \$510.68$ million;
 $HV_{\text{UL}} = \$643.89$ million.
d. Value of equity = \$508.57 million.
- 22-1 AP = \$375,000; NP = \$750,000; SD = \$750,000;
Stockholders = \$343,750.
- 22-2 a. Total assets: \$327 million.
b. Income: \$7 million.
c. Before, \$15.6 million;
After, \$13.0 million.
d. Before, 35.7%;
After, 64.2%.
- 22-3 a. \$0.
b. First mortgage holders, \$300,000;
Second mortgage holders, \$100,000 plus \$12,700 as a general claimant.

- c. Trustee's expenses, \$50,000;
Wages due, \$30,000;
Taxes due, \$40,000.
- d. *Before subordination*
Accounts payable = \$6,350;
Notes payable = \$22,860;
Second mortgage = \$12,700 + \$100,000;
Debentures = \$25,400;
Sub. debentures = \$12,700.
After subordination
Notes payable = \$35,560;
Sub. debentures = \$0.
- 22-4** a. \$0 for stockholders.
b. AP = 24%;
NP = 100%;
WP = 100%;
TP = 100%;
Mortgage = 85%;
Subordinated debentures = 9%;
Trustee = 100%.
- 23-1** Net payment = LIBOR + 0.2%.
- 23-2** $r_d = 7.01\%$.
- 23-3** $r_d = 5.96\%$.
- 23-4** Net to Carter = 9.95% fixed;
Net to Brence = LIBOR + 3.05% floating.
- 23-5** a. Sell 105 contracts.
b. Bond = -\$1,414,552.69;
Futures = -\$1,951,497.45;
Net = +\$536,944.76.
- 24-1** 1.4.
- 24-2** 12%.
- 24-3** 15.96%.
- 24-4** 16.2%; 45.9%.
- 24-5** a. $r_i = r_{RF} + (r_M - r_{RF}) \frac{\rho_{iM}\sigma_i}{\sigma_M}$.
- 24-6** a. 14.15%.
b. 16.45%.
- 24-7** a. $b = 0.56$.
b. X: 10.6%; 13.1%.
M: 12.1%; 22.6%.
c. 8.6%.
- 24-8** a. $b = 0.62$.
- 25-1** a. \$1.074 million.
b. \$2.96 million.
- 25-2** a. \$4.6795 million.
b. \$3.208 million.
- 25-3** a. -\$19 million.
b. \$9.0981 million.
- 25-4** a. -\$2.113 million.
b. \$1.973 million.
c. -\$70,222.
d. \$565,090.
e. \$1.116 million.
- 25-5** a. \$2,562.
b. E[NPV] = \$9,786;
Value of growth option = \$7,224.
- 25-6** P = \$18.646 million;
X = \$20 million; $t = 1$;
 $r_{RF} = 0.08$; $\sigma^2 = 0.0687$;
V = \$2.028 million.
- 25-7** P = \$10.479 million;
X = \$9 million; $t = 2$;
 $r_{RF} = 0.06$; $\sigma^2 = 0.0111$;
V = \$2.514 million.
- 25-8** P = \$18,646;
X = \$20,000; $t = 2$;
V = \$5,009.
- 26-1** \$500 million.
- 26-2** \$821 million.
- 26-3** \$620.68 million.
- 26-4** a. $b_U = 1.13$.
b. $r_{sU} = 15.625\%$.
- c. 16.62%; 18.04%;
20.23%.
- d. 20.23%.
- 26-5** a. $V_U = V_L = \$20$ million.
b. $r_{sU} = 10\%$; $r_{sL} = 15\%$.
c. $S_L = \$10$ million.
d. $WACC_U = 10\%$;
 $WACC_L = 10\%$.
- 26-6** a. $V_U = \$12$ million;
 $V_L = \$16$ million.
b. $r_{sU} = 10\%$; $r_{sL} = 15\%$.
c. $S_L = \$6$ million.
d. $WACC_U = 10\%$;
 $WACC_L = 7.5\%$.
- 26-7** a. $V_U = \$12$ million.
b. $V_L = \$15.33$ million.
c. \$3.33 million versus \$4 million.
d. $V_L = \$20$ million; \$0.
e. $V_L = \$16$ million;
\$4 million.
f. $V_L = \$16$ million;
\$4 million.
- 26-8** a. $V_U = \$12.5$ million.
b. $V_L = \$16$ million;
 $r_{sL} = 15.7\%$.
c. $V_L = \$14.5$ million;
 $r_{sL} = 14.9\%$.
- 26-9** a. $V_U = V_L = \$14,545,455$.
b. At D = \$6 million:
 $r_{sL} = 14.51\%$;
WACC = 11.0%.
c. $V_U = \$8,727,273$;
 $V_L = \$11,127,273$.
d. At D = \$6 million:
 $r_{sL} = 14.51\%$;
WACC = 8.63%.
e. D = V = \$14,545,455.
- 26-10** a. V = \$3.29 million.
b. D = \$1.71 million;
Yield = 8.1%.
c. V = \$3.23 million;
D = \$1.77 million;
Yield = 6.3%.

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