APPENDIX C

Answers to Selected Problems

Chapter 2

B1. $5,257.41
B3.   a. $11,000; $10,000
      b. $12,000; $10,909.09
      c. $11,000; $9,166.67
B5.   a. yes; $9,000; 900%
      b. -$5,000; no
C1.   a. 20%; 100%; -100%
      b. -15%; -100%; 200%

Chapter 3

B1.   a. $305 million; $350 million
      b. $140 million; $210 million
      c. $165 million
      d. $300 million
      e. $5 million; $250 million
      f. $65 million; $(300) million;
         $235 million
B2.   a. $10,200 thousand
      b. $1,700 thousand
      c. $8,500 thousand
C1. $750,000; Economic income includes
      changes in market values of assets.

Chapter 4

B1.   a. $6,710.08
      b. $9,818.15
      c. $12,233.48
      d. $12,494.32
      e. $12,500.00
B3.   1.0000%; 12.0000%
B5.   a. $3,178.27
      b. $6,009.08
B7.   a. $1,091.15
      b. $1,530.39
      c. $2,146.46
B9.   a. $1,261.81
      b. $1,781.15
      c. $1,375.37
B11. a. 19.5618%
      b. $4,782.47
      c. $8,173.91
B13. $3,815.29
B15. a. 16.0755%
      b. 9.3807%

B17. a. 0.5833%
      b. 7.0000%
      c. 7.2290%
B19. $12,940.88
B21. $9,883.47
B23. $13,302.21
B25. 12.0000%
B27. a. 17.67 periods
      b. 8.04 periods
      c. 4.96 periods
B29. $13,022.81
B31. a. 1.0000%
      b. 12.0000%
      c. 12.6825%
B33. $6,035.23
B35. $5,425.23
B37. 8.0005%; 0.6434%
B39. $320.65
B41. $624.15
B43. Special-financing price is $196.60 lower
B45. $123,365.14
B47. b. $119,787.38 ($10^{th}$ payment)
C1. $169.79
C3. $47,912.81
C5. $725.65
C7. $1,093.60
C9.   5.9463%
C11. a. $5,358.92
      b. 29.1587%
C13. $594,244.09

Chapter 5

B1.	7.5 years
B3.	9.4539%; 9.6773%
B5.	a. $1,208.29
	b. 9.3351%
	c. 9.4389%
B7.	4.7681%
B9.	12.1356%
B11.	3.33%
B14.	a. $1,010.61; $1,059.42; $1,097.27
	b. $1,020.18; $1,116.03; $1,195.42
	c. $1,001.17; $1,006.39; $1,010.18
	d. Interest-rate risk is higher for longer maturity bonds.
B16.	a. -5.6666% APY
	b. 23.3185% APY
B17.	a. $31.50
	b. 12.12%
B19.	$28.43
B21.	$5.13
B23.	3.10%
C1.	a. 13.4175%; 13.876%
	b. 13.3996%; 13.8485%
	c. 13.3999%; 13.8488%
C3.	-$0.1066
C5.	18.24%; 12.00%; Risk; Diversification
C7.	a. 16.20%
	b. 16.20%

Chapter 6

B1.	$32.62
B3.	8%; 16%
B5.	a. project 1: 15.2%; 12.16; 3.49%
	a. project 2: 14.4%; 31.84; 5.64%
	a. project 3: 10%; 1.6; 1.26%
	b. project 1 offers the lowest risk-return ratio
B7.	$21.00
B9.	a. 0.40
	b. $50,000
	c. 22.5%
B11.	a. 16.8%
	b. 15.4%
C1.	a. 3, 1, 2, 7
	b. 7
	c. Invest 60.24% in risk free asset and 39.76% in portfolio 7; 11.63%
	d. Borrow 19.02% at risk free rate and invest 119.02% in portfolio 7; 14.88%
C5.	216.32%

Chapter 7

B1.	14.14%
B3.	25.90%
B5.	1.25; 10%
B7.	1.60; 8.67%
B9.	22.88%
B11.	3.92
B13.	13.125%
C1.	a. 9.75%; 15.00%
	b. 1.49
	c. 11.59%
C3.	8.80% (DUCCA); 12.93% (LINCOLN)

Chapter 8

B1.	24.60%
B3.	14.25%
B5.	47.62%; 52.38%
B7.	13.77%
B9.	23.33%
B11.	15.2%
B13.	a. 4.53%; b. 15.60%; c. 12.22%
C1.	a. 0.835; b. 15.01%; c. 14.2%
C3.	1.53

Chapter 9

B1.	a. 3.16 years
	b. $7.6684
	c. 20.0265%
B3.	no, NPV = -$785.12
B5.	$2.57 million
B6.	a. -$10.11 million
	b. -$3.37 per share
B9.	a. R2
	b. Size difference
	c. 13.07%
B11.	a. $39,456.29
	b. -$518.50
B13.	a. $87.75; Yes
	b. -31.12%; Yes
	c. 0
	d. Select the project with the highest NPV.
B15.	a. $58,881.52; $25,815.74
	b. 44.51%; 28.65%
	c. Take A
C1.	a. $0.31; 15.1275%; $2.51; 16.9700%
	b. Both
	c. both
	d. B

Chapter 10

B1. $681.91
B3. a. $500,000; $70,000; $500,000
     b. $122,891.34
     c. $4,622,891.34
B5. -$15,276
B7. $13,254.32
B9. a. -$360,000
b. $114,000
     c. $75,000
     d. $93,501.50
B11. $4,159,983
B13. $155,260.29
B15. $52,000; $50,809.52; $49,960.73; $51,585.22
B17. -$670,201.41
B19. A; it has a lower EAC ($658.14)
B21. $3,531,645.67; $353.16
C1. Japanese, lower EAC ($165,417)
C3. $34,496
C5. a. -$38,388.43; -$22,119.05;
     -$51,912.10; -$20,874.62;
     -$66,801.79; -$21,074.01;
     -$83,256.20; -$21,962.78
     b. every 3 years

Chapter 11

B1. $43,579
B3. Process B, higher NPV ($1,126,283.72)
B5. a. $200,000
     b. $350,000
B7. $33,333.33
B9. a. No
     b. $10,000,000
     c. $5,703,281.15
B11. a. A, higher NPV ($8,509.03)
     b. B higher NPV ($8,293.87)
B13. b. 12.4%
     c. $3,506
C1. $TR = (2,538,000 \times Q_D^2)^{1/3}$;
     $MR = MC = \$0.387$
     $P = \$0.5805$
C3. a. $106.81
     b. Rational for 2nd outcome; $123.82

Chapter 12

B1. a. $1,080
     b. $230
     c. $0; No
B3. -2.78%; -100.00%

4.17%; -100.00%
11.11%; -100.00%
11.11%; 66.67%
11.11%; 233.33%
B5. $952.38
B7. $103,286.38
B10. a. $20; $15
     b. $5; $0
     c. $25; $25
C1. a. $2.36
     b. $3.30
     c. $3.11
     d. The simple option model calculated a
       higher put price than did put-call-parity.
C2. a. $1,000
     b. $1,000
     c. 11.11%

Chapter 13

B1. a. $11.61
     b. $47.89
B3. $0.88
B5. a. $3.74
     b. $3.60
     c. $2.40
     d. $3.07
B7. $3.35
B9. a. $1.54; $1.54; $0
     b. $3.83; $1.83; $2.00
     c. $5.50; $1.50; $4.00
B10. a. $3.50
     b. $3.12
     c. $2.74
B13. a. $2.48
     b. $2.66
     c. $2.84
B15. a. Yes.
     b. No
     c. Yes
B17. a. Buy an interest rate cap
     b. 8.5%; 7.75%; 9.5%; 10%; 10%; 10%; 10%;
       8.5%
     c. $0; $0; $0; $3,125,000; $6,250,000;
       $8,125,000; $1,875,000; $0
B20. a. -$120,000; -$240,000; $120,000;
       $300,000; $60,000; -$240,000
     b. -$120,000; $60,000; $240,000;
       $600,000; $960,000; $1,140,000
     c. -$120,000; -$60,000; -$240,000;
       -$660,000; -$720,000; -$1,080,000
C1. Trial and error with a spreadsheet

Chapter 14

B1.   a. no effect on any of them; after-tax cash
      outlay = $1,000,000
      b. decreases $1,000,000; decreases $400,000;
      decreases $600,000; after-tax cash outlay =
      $600,000
B3.   a. $10 million; $100 million
      b. $0; $70 million
      c. -$10 million; $80 million
      d. $2.5 million; $77.5 million
      e. Asset substitution
B3. $4 37,000
B5.   a. $160,000; $15,000
      b. $300,000; $300,000
      c. $80,000; $20,000;
      $150,000; $400,000
      d. both favor the first plan
B7.   a. $100
      b. $80
C1.   a. $20 million
      b. $17.14 million
C3.   a. $6,000; $4,000; $0; $0; $5,880;
         $3,920
      b. $6,000; $3,000; $6,000; $4,000
      c. $120; -$900; Debtholders

Chapter 15

B1.   a. $24,000
      b. 10.67%
      c. 11.94%
B3. $2.25
B4.   a. $80,000
      b. -$70,000
      c. $1.60

Chapter 16

B2.   a.$40,625
      b. $47,734.38
B3.   The choice does not matter; both have WACC
      = 16.28%. Taxes are approximately
      symmetric.
B5.   18.17%
B7.   a. $6,000
      b. $3,900
      c. $3,354
B9.   a. 14.82%
      b. 12.76%
      c. 13.43%
      d. 1.57

C1.   a. buy 5% of B, using 44% debt
      b. buy 10% of A, using 10.67% debt
C3.   If the risk-free rate is greater than 15.82%
      APY

Chapter 17

B1.   a. 3.40 - 4.30; 55 - 65; 25 – 30
B3.   a. 2.50
      b. $50; 2.00
      c. $108; 2.16
B5.   12.75%
B7.   a. 14.16%
      b. 14.38%
B9.   16.73%
B11. $243,486.99
B13. a. $613,702.06
      b. 0.2785
      c. 23.8138%
      d. 24.9485%

Chapter 18

B1.   a. 33.86%
      b. $1.75 the first year, followed by a $0.20
      increase each year
B3.   a. Yes; It is now $0.50 per
         pre-split share
      b. Stock price increase
B5.   a. $2.05; 27.33%
      b. low growth in cyclical industries
B7.   a. $29.44
      expropriated some of their wealth
B9. $1.52
C1.   a. half the taxes paid ($6 million) with a share
      repurchase
      b. If shareholders do not have any other
         investment opportunities such that
         $r \times (1-T) > r_f$

Chapter 19

B1.   a. 8.3265%
      b. 8.3995%
      c. 8.405%
B3. $30.11
B5.   a. N=15 (nearest integer to 15.23);
         $21.43
      b. $0.1047
      c. The firm does not have broad market
         appeal or has highly concentrated
         ownership.
      d. Time to complete and lack of new
         investors
B7.   7.26%
B9.   a. $1 increase
      b. 50,000
      c. $10,000 increase
      d. No
B11. a. 5%
      b. Buy 60,000 shares
B13. a. $19,600,000; $1.96
      b. $25,360,000; $1.95
      c. $23,920,000; $1.71

Chapter 20

B1.   9.1 years
B3.   a. 6.27% APY
      b. 12.735% APY
      c. the rate would be between the answers for a
      and b; and depend on particulars such as loss
      carryforward rules.
B5.   a. $100; $102.50; $105; $107.50; $1,110
      b. 10.45%
      c. 6.90%
B7.   a. APYs: 5.4650%; 5.6686%; 5.5030%
      b. U.S. Public offering
B9.   a. $375,000
      b. $2,211,077
B13. a. 1-7: $50; 8: $550; 9: $25; 10: $525
      b. 11.78% APY
B15. a. $4,006,673
      b. 9.18%
C1.   a. 8.077% APY
      b. 8.418% APY
C3.   a. $11,996,650.11
      b. decrease by $300,000

Chapter 21

B1. $0.46 million

B5. $17,279.03
B7. $118,438.67
B9.   a. $12.17 million
      b. 15.24%
      c. borrow and buy
B11. a. $1,130,211
      b. $4,393,938
B13. a. 9.86%
      b. yes
B15. $212,582
C1. $5,168.00

Chapter 22

B1. $92,857.14; $107,142.86; $14,285.72
B5. $3,700
B7.   a. yes
      b. -$2,000 before tax
      c. compensating balance
B9.   23.6984% APY
B11. a. 15.87%
      b. 17.65%
      c. 17.74%
      d. 18.56%
B13. b. 11.2672% APR; 11.7522% APY
C1.   a. $725,000
      b. 1.93 days
      c. $21.125
C3.   a. 8.89%
      b. 8.22%
      c. 7.11%

Chapter 23

B1.   Current policy
B3. $42,298.50
B3. $10,940.08
B5.   Proposed Policy
B7.   a. $29,000
      b. 17.66 rolls; $17,663.52
      c. $17,666.67; $17,676.47; 18 rolls
B9.   33 days
B11. a. $2,000
      b. 500; $1,000.00
      c. order 1000; $1,500
B13. a. 16 units
      b. 26 units
B15. reorder point is 30; safety stock is 10
C1.   a. 27; Grant credit
      b. 10; Deny credit

Chapter 24

B1.   a. $110,000
B5.   No additional financing is needed.
B7.   a. $6,000 available for investment
      b. $38,000 additional external financing needed

Chapter 25

B1.   a. ½ of Beatrice for 1 of Nuts4U
      b. 5/8 of Beatrice for 1 of Nuts4U
      c. down 10%
B3.   42.86%
B5.   a. $15.0469
      b. 22.8315%
      c. 4.86 years
      d. yes; positive NPV
B7.   a. $115 million; $100 million
      b. $215 million; $50 million;
         $165 million
      c. No
B8. $125 million
B9.   a. 15; 12; 14; 10.7; 11; 10;
         8.4; 7.5; 6.2; 8.0; 8.0; 8.3;
         6.1; 6.0; 6.2; 6.2; 6.3; 5.9
      b. Multiple of EBITDA
      c. $590 - $630 million; Differences in
         interest and depreciation expenses
B11. a. 17.21%
      b. $292.69 million
      c. $159.87 million
B13. $250 - $267 million would satisfy all four
      multiples
B15. Net APV = -$28.98 million
C1.   a. $300 million
      b. 23.33%
      c. $0.10 / share

Chapter 26

B1.   Trade creditors receive $2,000,000
      Banks receive $500,000
      Mortgage holders receive $500,000
B2.   71%
B5.   Secured debt holders receive $4 million
      Unsecured debt holders receive
      $6 million
B7.   Trade creditors receive $150
      Banks receive $750
      Mortgage holders receive $1,650
B9.   a. Trade creditors

      b. Yes
B11. Gray; Likely; Gray; Gray; Gray; Likely
C1.   a. Yes
      b. Trade creditors receive $14.7
         Banks receive $24.5
         Mortgage holders receive $20
         Senior debenture holders receive $9.8

Chapter 27

B3.   a. 6.47%
      b. 7.10%
      c. Domestic; Lower issuance costs,
         lower coupon
B5.   a. $0.76
      b. Covered interest arbitrage
      c. $1.45 / $100 (3 mos.);
         SF 1.88 / SF 133.33 (3 mos.)
B7.   a. $1.50 / £
      b. Buy NY gold; Sell London gold
      c. $41.90 / oz; £24.65 / oz
B9.   a. SF 1= CD 1.30
      b. No; Yes
      c. Yes; No
B11. 4.5% per month (30 days)
B13. a. $0.6113 / SF; $0.6227 / SF;
         $0.6285 / SF; $0.6343 / SF;
         $0.6343 / SF
      b. $30; $9.17; $10.59; $12.57; $12.69;
         $10.78
      c. $6.68 million
C1.   6.01% for six months