Financial Management 7th

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Task-Based Simulation Solutions

2020

Chapter 2. Time value of money

[Problem 1]

(Instruction 1)

$25,000 = PMT x 2.48685 → PMT = $10,053

Time	Beginning	Payment	Interest	Principal	Ending
1	25,000	10,053	2,500	7,553	17,447
2	17,447	10,053	1,745	8,308	9,139
3	9,139	10,053	914	9,139	0
Total		30,159	5,159	25,000	

(Instruction 2)

Time	Payment	Interest	Principal
1	10,053	2,500(24.9%)	7,553(75.1%)
2	10,053	1,745(17.4%)	8,308(82.6%)
3	10,053	914(9.1%)	9,139(90.9%)

[Problem 2]

(1) 현재 $40,000의 10년 후 미래가치

[EXCEL] 함수선택 FV

Rate=5%, Nper=10, PV=40,000 → FV= -65,156

(2) 25회 선불연금의 10년 후 현재가치

[EXCEL] 함수선택 PV

Rate=8%, Nper=25, PMT=65,156, Type=1 → PV= -751,168

(3) 10회 정상연금의 연금

[EXCEL] 함수선택 PMT

Rate=8%, Nper=10, PV=-100,000, FV=751,168 → PMT= -36,950

∴ Annual savings = $36,950

[Problem 3]

(1) 현재 $15,000의 5년 후 미래가치

[EXCEL] 함수선택 FV

Rate=5%, Nper=5, PV=15,000 → FV= -19,144

(2) 4회 선불연금의 5년 후 현재가치

[EXCEL] 함수선택 PV

Rate=6%, Nper=4, PMT=19,144, Type=1 → PV= -70,316

(3) 5회 정상연금의 연금

[EXCEL] 함수선택 PMT

Rate=6%, Nper=5, PV=-7,500, FV=70,316 → PMT= -14,254

∴ Annual savings = $14,254

[Problem 4]

5년 후의 채권의 가격

[EXCEL] 함수선택 PV

Rate=8.5%, Nper=15, PMT=90, FV=-1,000 → PV = - 1,042

현재시점의 채권의 가격

[EXCEL] 함수선택 PV

Rate=10%, Nper=5, PMT=90, FV=-1,042 → PV = - 988

∴ 현재 채권X의 가치 = $988

[Problem 5]

(Instruction 1)

[EXCEL] 함수선택 Nper

Rate=1%, PMT=10, PV=-350 → Nper= 43.29 → N=43 months

(Instruction 2)

[EXCEL] 함수선택 Nper

Rate=1%, PMT=30, PV=-350 → Nper= 12.47 → N=12 months

(Instruction 3)

(43 x $10) - (12 x $30) = $70

Chapter 3. FS analysis

[Problem 1]

(1) Account payable = $300,000 x 50% - 60,000 = $90,000
(2) Common stock = $300,000 x 50% - 97,500 = $52,500
(3) Sales = $300,000 x 1.5 = $450,000
(4) COGS = $450,000 x (1 - 25%) = $337,500
(5) Inventory = $337,500 ÷ 1.5 = $67,500
(6) Account receivable = 36.5days x $450,000 ÷ 365 = $45,000
(7) Fixed assets = $300,000 - ($90,000 x 1.8) = $138,000
(8) Cash = $90,000 x 1.8 - (45,000 + 67,500) = $49,500

[Problem 2]

(Instruction 1)

(1) Current ratio = $655,000 ÷ $330,000 = 1.98
(2) Quick ratio = (655,000 - 241,500) ÷ 330,000 = 1.25
(3) Days sales outstanding = 365 x 336,000 ÷ 1,607,500 = 76.29days
(4) Inventory turnover = 1,392,500 ÷ 241,500 = 5.77
(5) Asset turnover = 1,607,500 ÷ 947,500 = 1.70
(6) Net profit margin = 27,300 ÷ 1,607,500 = 1.70%
(7) ROA = 27,300 ÷ 947,500 = 2.88%
(8) ROE = 27,300 ÷ 361,000 = 7.56%
(9) debt-to-assets = (947,500 - 361,000) ÷ 947,500 = 61.90%

(Instruction 2)

Equity multiplier = Financial leverage = 947,500 ÷ 361,000= 2.62
Du Pont ROE = 1.70% x 1.70 x 2.62 = 7.57% (단수차이)

[Problem 3]

(1) Sales = 3,000 x 1.1 = $3,300 million
(2) Operating costs, excluding depreciation = 3,300 x 0.8 = 2,640
(3) EBITDA = (1) - (2) = 660
(4) Depreciation expense = 250 x 1.1 =275
(5) EBIT = (3) - (4) = 385
(6) Interest expense = 125
(7) EBT = (5) - (6) = 260
(8) Tax expense = 260 x 0.4 = 104 (9) Net income = (7) - (8) = $56 million

Chapter 4. Interest rate and risk

[Problem 1]

real risk-free rate = 5.5% - 3.25% = 2.25%

(참고) Yield-to-maturity = 5.5% + 0.6% + 1.8% + 2.15% = 10.05%

[Problem 2]

Default risk premium = 8% - 6% - 0.5% = 1.50%

[Problem 3]

Maturity risk premium = 6.2% - 3% - 3% = 0.20%

[Problem 4]

Expected return = 0.1 x -50% + 0.2 x -5% + 0.4 x 16% + 0.2 x 25% + 0.1 x 60%= 11.40%

Standard deviation = $\sqrt{0.1\times(-50-11.4)^2+0.2\times(-5-11.4)^2+0.4\times(16-11.4)^2+0.2\times(25-11.4)^2+0.1\times(60-11.4)^2}$ = 26.68%

Coefficient of variation = $\frac{26.68\%}{11.4\%}$ = 2.34

[Problem 5]

Beta of fund = (0.1 x 1.50) + (0.15 x -0.50) + (0.25 x 1.25) + (0.5 x 0.75) = 0.76

Expected return = 6 + (14-6) x 0.76 = 12%

[Problem 6]

$P_0 = \frac{\$5\times(1-0.05)}{0.15-(-0.05)}$ = \$23.75

[Problem 7]

$P_4 = \frac{D_5}{k_e-g} = \frac{\$0.50\times(1+0.07)^4}{0.12-0.07}$ = \$13.11

[Problem 8]

<수정 전>

$P_3 = \frac{D_4}{k_e-g} = \frac{\$1\times1.50^2\times1.08}{0.15-0.08}$ = \$34.714 $P_0 = \frac{1}{1.15^3}+\frac{1\times1.50^1}{1.15^4}+\frac{1\times1.50^2+P_3}{1.15^5}$ = \$19.89

<수정후>

$P_3 = \frac{D_4}{k_e - g} = \frac{\$1 \times 1.50^2 \times 1.08}{0.15 - 0.08}$ = $34.714 $P_0 = \frac{1}{1.15^1} + \frac{1 \times 1.50^1}{1.15^2} + \frac{1 \times 1.50^2 + P_3}{1.15^3}$ = $26.31

[Problem 9]

Expected return of fund P = (0.5 x 9) + (0.5 x 10.75) = 9.88%
Expected return of fund Q = (1/3 x 9) + (1/3 x 10.75) + (1/3 x 12.50) = 10.75%
10.75- 9.88 = 0.88%

[Problem 10]

13 = 4.5 + 5.5 x beta ➠ beta = 1.55
1.55 = (0.8 x 1.5) + (0.2 x beta) ➠ beta = 1.75

[Problem 11]

(Instruction 1)
CV(X) = 35/10 = 3.50 CV(Y) = 25/12.5 = 2.00

(Instruction 2)
Stock Y

(Instruction 3)
Required return (X) = 6 + 5 x 0.9 = 10.5%
Required return (Y) = 6 + 5 x 1.2 = 12%

(Instruction 4)
Stock Y

(Instruction 5)
Required return (portfolio) = 10.5 x 0.75 + 12 x 0.25 = 10.875%

(Instruction 6)
Stock Y

Chapter 5. Capital Structure

[Problem 1]

$k_e = \frac{\$2 \times 1.07}{\$22.5} + 0.07 = 0.1651$ ➠ 16.51%

WACC = 12% x 0.6 x 0.4 + 16.51% x 0.6 = 12.79%

[Problem 2]

$k_e = \frac{\$2 \times 1.07}{\$24.75} + 0.07 = 0.1565$

13.95% = 11% x 0.65 x w + 15.65% x (1-w) → w= 20%

[Problem 3]

(1) Under the old production process

EBIT = \$28.80 x 450,000 units - 10,200,000 - 1,560,000 = \$1,200,000

$EPS = \frac{(1,200,000 - 4,800,000 \times 8\%) \times (1 - 0.4)}{240,000} = \$2.04$

(2) Under the new process if it uses debt

EBIT = \$28.80 x 450,000 units - 10,200,000 x 0.8 - 1,800,000 = \$3,000,000

$EPS = \frac{(3,000,000 - 4,800,000 \times 8\% - 7,200,000 \times 10\%) \times (1 - 0.4)}{240,000} = \$4.74$

(2) Under the new process if it uses common stock

EBIT = \$28.80 x 450,000 units - 10,200,000 x 0.8 - 1,800,000 = \$3,000,000

$EPS = \frac{(3,000,000 - 4,800,000 \times 8\%) \times (1 - 0.4)}{240,000 + 240,000} = \$3.27$

[Problem 4]

(Instruction 1)

$k_{ps} = \frac{5}{49} = 10.20\%$ $k_e = \frac{3.50}{36} + 0.06 = 15.72\%$

WACC = (10 x 0.7 x 0.15) + (10.20 x 0.10) + (15.72 x 0.75) = 13.86%

(Instruction 2)

Project 1, Project 2

[Problem 5]

(Instruction 1)

	KIM	Jordan
Debt	400,000	200,000
Equity	200,000	200,000
Asset	600,000	400,000
debt ratio	66.67%	50%

(Instruction 2)

	Jordan
Debt	400,000
Equity	200,000
Asset	600,000
debt ratio	66.67%

(Instruction 3)

ROA and ROE will be higher under Jordan as compared to KIM.

[Problem 6]

Bond A

[EXCEL] 함수선택 PV

만기 4년 : Rate=9.6%, Nper=4, PMT=100, FV=1,000 → PV= -1,013

만기 3년 : Rate=9.6%, Nper=3, PMT=100, FV=1,000 → PV= -1,010

만기 2년 : Rate=9.6%, Nper=2, PMT=100, FV=1,000 → PV= -1,007

만기 1년 : Rate=9.6%, Nper=1, PMT=100, FV=1,000 → PV= -1,004

만기 0년 : Rate=9.6%, Nper=0, PMT=100, FV=1,000 → PV= -1,000

Bond B

[EXCEL] 함수선택 PV

만기 4년 : Rate=9.6%, Nper=4, PMT=0, FV=1,000 → PV= -693

만기 3년 : Rate=9.6%, Nper=3, PMT=0, FV=1,000 → PV= -760

만기 2년 : Rate=9.6%, Nper=2, PMT=0, FV=1,000 → PV= -832

만기 1년 : Rate=9.6%, Nper=1, PMT=0, FV=1,000 → PV= -912

만기 0년 : Rate=9.6%, Nper=0, PMT=0, FV=1,000 → PV= -1,000

[Problem 7]

(Instruction 1)

HL

Debt = 20,000,000 x 0.5 = 10,000,000 ➠ Equity=10,000,000

Interest = 10,000,000 x 12% = 1,200,000 ➠ NI = (4,000,000-1,200,000) x 0.6 = 1,680,000

ROE = 1,680,000/10,000,000 = **16.8%**

LL

Debt = 20,000,000 x 0.3 = 6,000,000 ➠ Equity=14,000,000

Interest = 6,000,000 x 10% = 600,000 ➠ NI = (4,000,000-600,000) x 0.6 = 2,040,000

ROE = 2,040,000/14,000,000 = **14.6%**

(Instruction 2)

Debt = 20,000,000 x 0.6 = 12,000,000 ➠ Equity=8,000,000

Interest = 12,000,000 x 15% = 1,800,000 ➠ NI = (4,000,000-1,800,000) x 0.6 = 1,320,000

ROE = 1,320,000/8,000,000 = **16.5%**

[Problem 8]

(Instruction 1)

Interest = 2,000,000 x 10% = 200,000 ➠ NI = (4,000,000-200,000) x 0.65 = 2,470,000

EPS = 2,470,000/600,000 = **$4.117**

$P_o = \frac{D}{k_e} = \frac{4.117}{0.15}$ = **$27.447**

(Instruction 2)

MV of equity = 27.447 x 600,000 = $16,468,200

MV of debt = $2,000,000 ➠ MV of firm value = $18,468,200

Weight of equity = 16,468,200/18,468,200 = 0.89 ➠ Weight of debt = 0.11

WACC = 10% x (1-0.35) x 0.11 + 15% x 0.89 = **14.1%**

(Instruction 3)

NI = (4,00,000 - 10,000,000 x 12%) x 0.65 = $1,820,000

repurchased shares = 8,000,000/27.447 = 327,239

outstanding shares = 600,000 - 327,239 = 272,761

EPS = 1,820,000/272,761 = 6.67

stock price = 6.67/0.17 = 39.24

MV of equity = 39.24 x 272,761 = 10,703,142

MV of debt = 10,000,000

MV of firm value = 20,703,142 ➠ wd=0.483, we=0.517

WACC = 12% x 0.65 x 0.483 + 17% x 0.517 = 12.56% ➠ change

(Instruction 4)

skip

(Instruction 5)

TIE(original) = 4,000,000/200,000 = **20**

Interest = 10,000,000 x 12% = 1,200,000 ➠ TIE(new) = 4,000,000/1,200,000 = **3.3**

[Problem 9]

(Instruction 1)

EBIT after change = ($95-$40) x 7,000 - 200,000 - 50,000 = $135,000

ROA before change = $50,000/$500,000 = 10%

ROA after change = $135,000/$900,000 = 15% ➠ **change**

(Instruction 2)

BEP before change = $200,000/$50 = 4,000 units

BEP after change = $250,000/$55 = 4,545 units ➠ **increase**

(Instruction 3)

Interest = 400,000 x 0.1 = $40,000 ➠ NI = 135,000 - 40,000 = $95,000

Sales revenue = 95 x 7,000 = $665,000

profit margin = 95,000/665,000 = 14.3%

Asset turnover = 665,000/900,000 = 0.739

ROA = 14.3% x 0.739 = 10.6% ➠ **change**

[Problem 10]

1. True 2. True 3. True 4. False 5. True 6. False

[Problem 11]

$\frac{0.75}{1.09} \times 5$ = **$3.44**

[Problem 12]

P/E before repurchase = $32/2=16

EPS after repurchase = $2,000,000/800,000 = $2.50

Stock price after repurchase = $2.50 x 16 = **$40**

Chapter 6. Capital Budgeting

[Problem 1]

$$NPV_X = -100{,}000 + \frac{30{,}000}{1.12^1} + \frac{50{,}000}{1.12^2} + \frac{70{,}000}{1.12^3} = 16{,}470$$

$$NPV_Y = -70{,}000 + \frac{30{,}000}{1.12^1} + \frac{30{,}000}{1.12^2} + \frac{30{,}000}{1.12^3} + \frac{30{,}000}{1.12^4} + \frac{10{,}000}{1.12^5} = 26{,}795$$

Rate=12%, Nper=3, PV= -16,470 → PMT= +6,837 = EAA(X)

Rate=12%, Nper=5, PV= -26,795 → PMT= +7,433 = EAA(Y)

[Problem 2]

(Instruction 1)

	t=1	2	3	4
SL	200,000	200,000	200,000	200,000
MACRS	264,000	360,000	120,000	56,000

(Instruction 2)

$$PV_{SL} = \frac{200{,}000 \times 0.4}{1.10^1} + \frac{200{,}000 \times 0.4}{1.10^2} + \frac{200{,}000 \times 0.4}{1.10^3} + \frac{200{,}000 \times 0.4}{1.10^4} = \$253{,}589$$

$$PV_{MACRS=} \frac{264{,}000 \times 0.4}{1.10^1} + \frac{360{,}000 \times 0.4}{1.10^2} + \frac{120{,}000 \times 0.4}{1.10^3} + \frac{56{,}000 \times 0.4}{1.10^4} = \$266{,}371$$

266,371 - 253,589 = $12,782

MACRS method would produce the higher NPV.

[Problem 3]

(Instruction 1)

$$NPV_X = -6{,}000 + \sum_{t=1}^{5} \frac{2{,}000}{1.14^t} = +866 \qquad NPV_Y = -18{,}000 + \sum_{t=1}^{5} \frac{5{,}600}{1.14^t} = +1{,}225$$

$$6{,}000 = \sum_{t=1}^{5} \frac{2{,}000}{(1+IRR_X)^t} \rightarrow IRR_X = 20\% \qquad 18{,}000 = \sum_{t=1}^{5} \frac{5{,}600}{(1+IRR_Y)^t} \rightarrow IRR_Y = 17\%$$

$$6{,}000 = \frac{2{,}000 \times 6.61010}{(1+MIRR_X)^5} \rightarrow MIRR_X = 17\% \qquad 18{,}000 = \frac{5{,}600 \times 6.61010}{(1+MIRR_Y)^5} \rightarrow MIRR_Y = 16\%$$

$$Payback_X = \frac{6{,}000}{2{,}000} = 3 \text{ years} \qquad Payback_Y = \frac{18{,}000}{5{,}600} = 3.21 \text{ years}$$

(Instruction 2) Both Project X and Project Y

(Instruction 3) Project Y

(Instruction 4) Different in size

(Instruction 5)

k=0 ➠ NPV(X) = -6,000 + 2,000 x 5 =4,000

NPV(Y) = -18,000 + 5,600 x 5 =10,000

k=∞ ➠ NPV(X) = -6,000 + 2,000 x 0 = -6,000

NPV(Y) = -18,000 + 5,600 x 0 = -18,000

cross-over rate

NPV(X) = NPV(Y)

-6,000 + 2,000 x PVIFA(R,5) = -18,000 + 5,600 x PVIFA(R,5)

PVIFA(R,5) = 3.333

Rate : N=5, PMT=, PV=-3.33 ➠ Rate = 15.24%

(Instruction 6)

0 ≤ k < 15.24% : Project Y

15.24% < k < 20% : Project X

k=15.24% : indifferent

[Problem 4]

(Instruction 1) NOPAT = 4,000,000 x (1-0.4) = 2,400,000 thousands of dollars

(Instruction 2) OCF = 2,4000,000 + 3,000,000 = 5,400,000 thousands of dollars

(Instruction 3) FCF = 5,400,000 - 1,300,000 = 4,100,000 thousands of dollars

[Problem 5]

(S - S x 0.55 - 800,000 x 1.10 - 600,000 x 1.10) x (1-0.4) = $2,500,000

S = $12,681,481

[Problem 6]

(Instruction 1) Year 0 cash outflow = 120,500 + 5,500 = 126,000

(Instruction 2)

Year 1 OCF = 44,000 x 0.65 + 120,500 x 0.33 x 0.35 = 42,518

Year 2 OCF = 44,000 x 0.65 + 120,500 x 0.45 x 0.35 = 47,579

Year 3 OCF = 44,000 x 0.65 + 120,500 x 0.15 x 0.35 = 34,926

(Instruction 3)

Year 3 TCF = 65,000 - (65,000 - 120,500 x 0.07) x 0.35 + 5,500 = 50,702

(Instruction 4)

$NPV = -126{,}000 + \frac{42{,}518}{1.12^1} + \frac{47{,}579}{1.12^2} + \frac{85{,}628}{1.12^3} =$ +10,841 >0 ➠ The machine should be purchased

[Problem 7]

Year 0 cash outflow = 1,500,000 + 400,000 = 1,900,000

EBITDA = (80-65) x 100,000 - 500,000 = 1,000,000

Year 1, 2, 3 OCF = 1,000,000 x 0.6 + 500,000 x 0.4 = 800,000

Year 4, 5 OCF = 1,000,000 x 0.6 + 0 x 0.4 = 600,000

Year 5 TCF = 200,000 x 0.6 + 400,000 = 520,000

$$NPV = -1{,}900{,}000 + \frac{800{,}000}{1.12^1} + \frac{800{,}000}{1.12^2} + \frac{800{,}000}{1.12^3} + \frac{600{,}000}{1.12^4} + \frac{1{,}120{,}000}{1.12^5} = +1{,}038{,}294$$

[Problem 8]

Existing equipment : 내용연수 5년, 정액법 가정

Year 0 FCF = -275,000 + 80,000 - (80,000 - 100,000) x 0.4 - 15,000 = -202,000

Year 1 OCF = 75,000 x 0.6 + (275,000 x 0.2 - 20,000) x 0.4 = 59,000

Year 2 OCF = 75,000 x 0.6 + (275,000 x 0.32 - 20,000)x 0.4 = 72,200

Year 3 OCF = 75,000 x 0.6 + (275,000 x 0.192 -20,000) x 0.4 = 58,120

Year 4 OCF = 75,000 x 0.6 + (275,000 x 0.1152 - 20,000) x 0.4 = 49,672

Year 5 OCF = 75,000 x 0.6 + (275,000 x 0.1152 - 20,000) x 0.4 = 49,672

Year 5 TCF = 275,000 x 0.0576 x 0.4 + 15,000 = 21,336

NPV = +45,504

[Problem 9]

(Instruction 1)

Year 0 cash flow = -250,000 -25,000 = -275,000

Year 1 OCF = 90,000 x 0.6 + 250,000 x 0.33 x 0.4 = 87,000

Year 2 OCF = 90,000 x 0.6 + 250,000 x 0.45 x 0.4 = 99,000

Year 3 OCF = 90,000 x 0.6 + 250,000 x 0.15 x 0.4 = 69,000

Year 4 OCF = 90,000 x 0.6 + 250,000 x 0.07 x 0.4 = 61,000

Year 5 OCF = 90,000 x 0.6 + 250,000 x 0 x 0.4 = 54,000

Year 5 TCF = 23,000 x 0.6 + 25,000 = 38,800

NPV = +37,035, IRR = 15%, MIRR = 13%, Payback = 3.33 years

(Instruction 2)

Plus 20%

△EBITDA = 90,000 x 0.2 = 18,000 △OCF = 18,000 x 0.6 = 10,800

△NPV = 10,800 x PVIFA(10%,5) = 40,940 NPV(after) = 37,035 + 40,940 = 77,975

Minus 20%

NPV(after) = 37,035 - 40,940 = (-)3,905

[Problem 10]

(Instruction 1)

Year 0 cash flow = -65,000 -2,000 = -67,000

EBITDA = 4,000 x 50 x 0.3 - 30,000 = 30,000

Year 1 OCF = 30,000 x 0.6 + 65,000 x 0.33 x 0.4 = 26,580

Year 2 OCF = 30,000 x 0.6 + 65,000 x 0.45 x 0.4 = 29,700

Year 3 OCF = 30,000 x 0.6 + 65,000 x 0.15 x 0.4 = 21,900

Year 3 TCF = 10,000 - (10,000 -65,000 x 0.07) x 0.4 + 2,000 = 9,820

NPV = +4,245

(Instruction 2)

△OCF = -4,000 x 0.2 x 50 x 0.3 x 0.6 = -7,200

△NPV = -17,595 ➠ NPV = 4,245 - 17,595 = -13,350

(Instruction 3)

Base-case NPV = +4,245

Worst-case

△OCF = (3,200 x 50 x 0.25 - 4,000 x 50 x 0.3) x 0.6 = -12,000

△NPV = -29,325 ➠ Worst-case NPV = 4,245 - 29,325 = -25,080

Best-case

△OCF = (4,800 x 50 x 0.35 - 4,000 x 50 x 0.3) x 0.6 = +14,400

△NPV = +35,189 ➠ Best-case NPV = 4,245 + 35189 = +39,434

Expected NPV = (4,245 x 0.50) + (-25,080 x 0.25) + (39,434 x 0.25) = +5,711

[Problem 11]

(1) Expected NPV

= (-70 x 0.05) + (-25 x 0.2) + (12 x 0.5) + (20 x 0.2) + (30 x 0.05) = +3

(2) Variance

= (-70-3)2x0.05 + (-25-3)2x0.2 + (12-3)2x0.5 + (20-3)2x0.2 + (30-3)2x0.05 = 558

➠ Standard deviation = (558)0.5 = 23.6

(3) CV(NPV) = 23.6 / 3 = 7.87

[Problem 12]

TCF = 10,000 - (10,000 - 75,000) x 0.4 = +36,000

Chapter 7. Derivatives

[Problem 1]

(Instruction 1)

Put option premium = 3.06

Call option premium = 9.29

(Instruction 2)

Return of a share of stock = $70 - 60 = +10

Return of a call option =Max[70-55, 0] - 9.29 = +5.71

Return of a put option =Max[55-70, 0] - 3.06 = -3.06

(Instruction 3)

Return of a share of stock = $50 - 60 = -10

Return of a call option =Max[50-55, 0] - 9.29 = -9.29

Return of a put option =Max[55-50, 0] - 3.06 = +1.94

(Instruction 4)

The total value of portfolio

if stock pice increases to $70 : 0.6 x $70 - 1 x Max[70-55, 0] = $27

if stock pice decreases to $50 : 0.6 x $50 - 1 x Max[50-55, 0] = $30

(Instruction 5)

The total value of portfolio

if stock pice increases to $70 : 0.75 x $70 - 1 x Max[70-55, 0] = $37.5

if stock pice decreases to $50 : 0.75 x $50 - 1 x Max[50-55, 0] = $37.5

[Problem 2]

Loss = 5,000,000 Canadian dollars x (0.75- 0.70) = $250,000

[Problem 3]

(Instruction 1) Increase

(Instruction 2) $9,000 x 245 ÷ 111 = $19,865

[Problem 4]

(Instruction 1)

	1	2	3	4
up	Benefit			Benefit
down		Benefit	Benefit	

(Instruction 2)

(1) (8 - 3) x 500 x 10 = +25,000

(2) (0 - 3) x 500 x 10 = -15,000

(Instruction 3)

(1) -(7 - 2.50) x 100 x 30 = -13,500

(2) -(0 - 2.50) x 100 x 30 = +7,500

(Instruction 4)

(1) (5 - 1.75) x 100 x 60 = +19.500

(2) (0 - 1.75) x 100 x 60 = -10.500

(Instruction 5)

(1) -(5 - 2.75) x 400 x 20 = -18,000

(2) -(0 - 2.75) x 400 x 20 = +22,000

[Problem 5]

oil price = $20 ➠ 50,000 x 0 - (50,000 x 5) = -250,000

oil price = $22 ➠ 50,000 x 0 - (50,000 x 3) = -150,000

oil price = $25 ➠ 50,000 x 0 - (50,000 x 0) = 0

oil price = $28 ➠ 50,000 x 3 - (50,000 x 0) = +150,000

oil price = $30 ➠ 50,000 x 5 - (50,000 x 0) = +250,000

Chapter 8. WCM

[Problem 1]

	AR	Sales	Profits
1	-	-	0
2	-	0	-
3	0	+	0
4	-	0	+

[Problem 2]

CCC = $365\times\frac{3}{15}+365\times\frac{2}{15\times0.8}-365\times\frac{1}{15\times0.8}=$ 103.42 days

CCC = $365\times\frac{3\times0.9}{15}+365\times\frac{2\times0.9}{15\times0.8}-365\times\frac{1\times1.1}{15\times0.8}=$ 86.99 days

Incremental profit = 15,000,000 x 8% x (103.42-86.88) ÷ 365 days = +54,016

[Problem 3]

(Instruction 1) CCC = 75 + 38 - 30 = 83 days

(Instruction 2) AR = 3,421,875 x 38/365 = 356,250

(Instruction 3) Turn times per year = 365/75 = 4.87

[Problem 4]

(Instruction 1) DSO = 10 x 0.4 + 40 x 0.6 = 28 days

(Instruction 2) AR = 912,500 x 28 /365 = 70,000

(Instruction 3) 0%, 3/97 x 365/30 = 37.6%

(Instruction 4) Decrease AR

[Problem 5]

(Instruction 1) CCC = 22 + 40 - 30 = 32 days

(Instruction 2) WCF = 1500 x 32 x $6 = $288,000

(Instruction 3) 1500 x 5 x $6 = $45,000

(Instruction 4) CCC = 20 + 40 - 30 = 30 days

WCF = 1800 x 30 x $7 = $378,000

[Problem 6]

(Instruction 1)

(1) Assets = (2,000,000 x 0.45) + 1,000,000 = 1,900,000
Equity = 1,900,000 x 0.4 = 760,000
Debt = 1,900,000 x 0.6 = 1,140,000
EBIT = 2,000,000 x 0.12 = 240,000
NI = (240,000 -1,140,000 x 0.08) x 0.6 = 89,280
ROE = 89,280 / 760,000 = 12%

(2) Assets = (2,000,000 x 0.50) + 1,000,000 = 2,000,000
Equity = 2,000,000 x 0.4 = 800,000
Debt = 2,000,000 x 0.6 = 1,200,000
NI = (240,000 -1,200,000 x 0.08) x 0.6 = 86,400
ROE = 86,400 / 800,000 = 11%

(3) Assets = (2,000,000 x 0.60) + 1,000,000 = 2,200,000
Equity = 2,200,000 x 0.4 = 880,000
Debt = 2,200,000 x 0.6 = 1,320,000
NI = (240,000 -1,320,000 x 0.08) x 0.6 = 80,640
ROE = 80,640 / 880,000 = 9%

(Instruction 2) not valid

(Instruction 3) liquidity vs. profitability

[Problem 7]

(Instruction 1) 1,400,000 x 3 = $4,200,000

(Instruction 2) 1,400,000 x 3 x 10% = $420,000

(Instruction 3) 420,000/12 = $35,000

[Problem 8]

(Instruction 1) $24,000

(Instruction 2) 20,000/30 x 4 + 4,000/30 x 6 = $3,467

(Instruction 3) 24,000/30 = $800

(4 days x 20,000/24,000) + (6 days x 4,000/24,000) = 4.333days

Chapter 9. M&A

[Problem 1]

(Instruction 1)

R = 5 + 6 x 0.9 = 10.4

P = $2 / (0.104 - 0.05) = $37.04

(Instruction 2)

R = 5 + 6 x 1.1 = 11.6

P = $2 / (0.116 - 0.07) = $43.48

(Instruction 3)

$37.04 ~ $43.48

[Problem 2]

(Instruction 1)

Total MV = 140 + 102 + 2.6/0.12 = 264M

Stock = 264 x 0.4 = $106M

Cash = $110M

(Instruction 2)

Stock : NPV = 264 - 106 - 140 = $18M

Cash : NPV = 264 - 110 - 140 = $14M

(Instruction 3)

Stock