

# Comprehensive Review

1. a

	$t_0$	$t_1$	$t_2$	$t_3$	$t_4$	$t_5$
	-50,000	15,000	15,000	18,000	18,000	15,000

CF

2<sup>nd</sup> CLR Work

CF <sub>0</sub>	-50,000	enter ↓
C <sub>01</sub>	15,000	
F <sub>01</sub>	2	
C <sub>02</sub>	18,000	
F <sub>02</sub>	2	
C <sub>03</sub>	15,000	
IRR	CPT	18.24 %

b) NPV of above

NPV	I = 16	enter ↓
NPV	CPT	2693

PV of CCA

$$C \times \frac{d}{d+k} \times \frac{2+k}{2(1+k)}$$

$$50,000 \times \frac{.30 \times .40}{.30 + .16} \times \frac{2 + .16}{2(1 + .16)}$$

$$50,000 \times .2608 \times .931 = 12144$$

PV of SV 15,000 FV 16 | S<sub>n</sub>

0 pmt CPT PV = 7142  
PV of lost CCA tax shield

$$\left(\frac{S_n}{1+k}\right)^n \times \frac{d}{d+k} \Rightarrow 7142 \times .2608 = \underline{\underline{1863}}$$

2016

c) NPV w/o trade in (from CF worksheet)

2693

Trade in 19,000

Revised CCA tax shield

$$\left( C \times \frac{d+K}{d+K} \times \frac{2+K}{2(1+K)} \right)$$
$$(50,000 - 19,000) \times 0.2608 \times \frac{2.16}{2.32} = 7529$$

Revised net SV

3809

(15,000 - 7,000) PV

Revised lost CCA tax shield

$$\frac{SV}{(1+K)^n} \times \frac{d+K}{d+K}$$

$$3809 \times 0.2608$$

(994)

32037

=

Q2	£ cash flows	£
	Yr.	
	1	50,000
	2	45,000
	3	40,000
		135,000
2	$\frac{105,000 - 95,000}{40,000}$	

Q3	CF	2 <sup>nd</sup> CLR work	NPV
	CF0	= -105,000	
	CF1	= 50,000	
	CF2	= 45,000	
	CF3	= 40,000	
	CF4	= 35,000	
	CF5	= 30,000	
			NPV = 24 ↓ CF NPV 10,605

$$Q4 \quad \frac{C_d t}{d+k} \times \frac{2+k}{2(1+k)} = \frac{105,000 \times .30 \times .40}{.30 + .24} \times \frac{2.24}{2.48}$$

$$= 21,075$$

PU of SV

10,000 FV

0 punt

5 n

CPT PV

3411

24 ,

PU of lost tax shield.

(758)

$$\frac{S_n}{(1+k)^n} \times \frac{d+k}{d+k} \Rightarrow 3411 \times \frac{.30 \times .40}{.30 + .24} = \underline{23,728}$$

5

	$t_0$	Per Year	$t_5$
N	(60,000)	V/C (85-82) × 2500	N 25,000
0	<u>30,000</u>	= 7500	0 (60,000)
	(30,000)	F/C. 15,000 - 8,000	<u>15,000</u>
		= 7000	
		<u>14,500</u>	

CF  $2^{42}$  CLR WORK

$$CFO = -30,000$$

$$C01 = 14,500$$

$$F01 = 4$$

$$C02 = 14,500 + 15,000 = 29,500$$

$$F01 = 1$$

$$NPV \quad I = 12 \downarrow$$

NPV CAP

$$NPV \quad 30,780$$

6. Payback

$$\frac{30,000}{14,500} = 2.06$$

$$7 \quad \frac{C_d +}{d + k} \times \frac{2 + k}{2(1 + k)}$$

$$\frac{30,000 \times .20 \times .40}{.20 + .12} \times \frac{2 + .12}{2(1 + .12)}$$

$$7500$$

$$\times .946$$

$$= 7098$$

8 Use high - low to  $\Rightarrow$  v/c

$$\frac{680,000 - 600,000}{100,000 - 80,000} = \$4 \text{ v/c}$$

note the 680 + 600 include dep<sup>n</sup> that is sunk but it behaves as a fixed cost and we are looking only for the v/c

$$SP \quad \$10 \quad - \quad VC \quad 4 \quad = \quad CM \quad 6$$

$$9) \quad \frac{C \downarrow T}{d+k} \times \frac{2+k}{2(1+k)}$$

$$\frac{(210,000 - 120,000) \times .3 \times .40}{.30 + .10} \times \frac{2 + .10}{2(1 + .10)} = 27,000 \times \frac{2.10}{2.20} = 25,773$$

10)	New	old	
Total	670,000	680,000	
Dep <sup>n</sup>	<u>70,000</u>	- <u>50,000</u>	
	600,000	- 630,000	= 30,000
			$\times (1 - 40\%)$
			<u>18,000</u>

18,000 pmt

3 n

10 i

0 FV

$$CAPX \quad PV \quad \Rightarrow \quad 44,763$$

11) Follows 12 - 00PS

$$12 \quad \frac{D}{E} = 1 \quad \text{and} \quad D + E = 1$$

$$D = E$$

$$\therefore .5D = .5E$$

$$\begin{aligned} \left[ \begin{array}{c} \text{Debt} \\ .5 \times (12\% \times (1-40\%)) \\ 3.6 \end{array} \right] + \left[ \begin{array}{c} \text{Equity} \\ .5 \times E \\ .5E \\ E \end{array} \right] &= 12\% \\ &= 12\% \\ &= 8.4 \\ &= 16.8 \end{aligned}$$

11 Rev 1,200,000

Exp 740,000

Net 460,000

Tax  $(1-40\%)$

276,000

put

12,

5 n

0 FU

CPT PV 994,918

cash in.

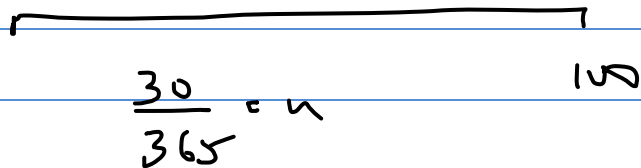
(PV of) cash out (1,000,000)

NPV

(50,82)

13 d

14



100 FV

0 pmt

10 i

CPT PV 99.22

15 c

16 b

17 a

18 d

19 b

20 c

21 b

22 d

use the combo answers to  
drive the analysis

23 c

days in

24

20% x 0 Cash = 0

60% x 10 days = 6

20% x 30 days =  $\frac{6}{12}$

12 days.

25 a

26 a

27 explicit value time value

(12-10) 0

\* 2 0

Spread across  
2 rights

28 d

29 d

30 b

31 a

32 1 20,000  $\frac{20}{140} \times 8\% = 1.14$

2 40,000  $\frac{40}{140} \times 6\% = 1.71$

3 70,000  $\frac{70}{140} \times 3\% = 1.50$

4 10,000  $\frac{10}{140} \times 10\% = .714$

140,000

5.064

33 d

34 d

35 8000  $\times 14\% = 1120$

36 c

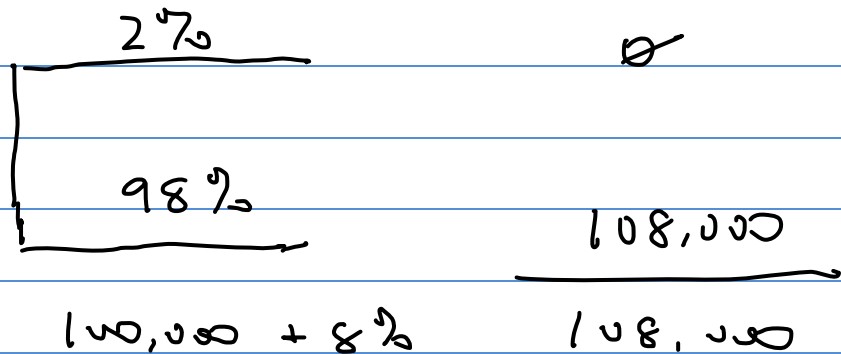
37 d

38 c



$$\begin{aligned}
 39 \quad R_j &= R_F + B_j (R_M - R_F) \\
 &= 5.5\% + 3 (12\%) \\
 &= 41.5\%
 \end{aligned}$$

40



$$\frac{108,000}{0.98} = 110,204 \quad \text{Principal + interest}$$

$$\begin{array}{r}
 \text{Interest} = 10,204 \\
 \text{Yield} \quad - 8,000 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \text{Premium} \quad 2,204 \quad \text{over} \\
 \hline
 + 100,000 \text{ invest.}
 \end{array}$$

2.204%

$$\begin{aligned}
 41) \quad R_j &= R_F + B_j (R_M - R_F) \\
 &1.20 \times -2\%
 \end{aligned}$$

$$42 \quad K_p = \frac{D}{NP}$$

$$.12 = \frac{50 \times 7\%}{NP}$$

$$NP = 29.17$$

$$43. \quad K_e = \frac{D_1}{NP} + g$$

$$.16 = \frac{2.50 \times 1.08}{NP} + .08$$

$$.08 = \frac{2.7}{NP}$$

$$NP = 33.75$$

$$44 \quad K_e = \frac{D_1}{NP} + g$$

$$= \frac{1.45}{35.75} + .06$$

$$= .1006$$

$$45 \quad K_e = \frac{D_1}{NP} + g$$

$$.13 = \frac{4}{NP} + .08$$

$$.05 = \frac{4}{NP}$$

$$NP = 80$$

$$46 \quad K_e = \frac{D_1}{NP} + g$$

$$.12 = \frac{1.37}{NP} + .08$$

$$NP = 34.25$$

$$47. \quad K_e = \frac{D_1}{NP} + g$$

$$= \frac{.25 \times 1.02}{4.00} + .02$$

$$= .08375$$

$$R_j = R_f + B_j (R_m - R_f)$$

$$.08375 = .03 + B_j (.09 - .03)$$

$$.05375 = .06 B_j$$

$$.8958 = B_j$$

$$48 \quad K_e = \frac{D_1}{NP} + g$$

$$.14 = \frac{(2.50 \times 1.08)}{NP} + .08$$

$$.06 = \frac{2.7}{NP}$$

$$NP = 45$$

49.

$t_{now}$

3%

$t_3$

100

31

3n

CPT PV

100 FV

91.51

0 pmt

With Flotation Costs 50 - 53

50

$K_p$

$$= \frac{D}{NP}$$

$= \frac{.40}{3.64 - (4\% \times 3.64)}$

$$= \frac{.40}{3.4944} = 11.45\%$$

51

yield to investors 9.8%

Cost to issuer

$$\begin{aligned}
 & 9.8\% \times (1 - 42\%) = 5.684\% \\
 & = \frac{5.684}{100 - [5\% \times 100 \times (1 - 42\%)]} \\
 & = 5.85\%
 \end{aligned}$$

52

$$\begin{aligned}
 R_j &= R_f + B_j (R_m - R_f) \\
 &= 4\% + .65 (6\%) \\
 &= 7.9\% \\
 &= \frac{7.9}{100 - [4\% \times 100 \times (1 - 34\%)]} \\
 &= 8.11\%
 \end{aligned}$$

53 (note the formula for  $k_{DE}$ )

$$\begin{aligned}
 k_e &= \frac{D_1}{P} + g \\
 &= \frac{1.10 \times (1.02)}{23} + .02 \\
 &= 6.88\%
 \end{aligned}$$

54

$$\begin{aligned} & \text{Debt} \\ & 7\% (1 - 40\%) \\ & 4.2\% \end{aligned}$$

$$\begin{aligned} & K_p \\ & K_p = \frac{D}{WP} \\ & = \frac{4}{33} \\ & = 12.1\% \end{aligned}$$

55

	Wtg	Cost	WACC
Debt	.30	4.8%	1.44
Preferred	.10	13.3%	1.33
Common	.60	18.25%	10.95
		WACC	<u>13.72</u>
			=

$$K_e = \frac{D_1}{WP} + g$$

$$= \frac{3 \times 1.10}{40} + .10$$

$$= .1828$$

56

	Wt <sub>g</sub>	Cost	WACC
Debt	$\frac{150}{350}$	10% (1-40%)	2.57
Equity	$\frac{200}{350}$	10.775%	$\frac{6.158}{8.72\%}$

$$K_e = \frac{D_1}{NP} + g$$

$$= \frac{1.10 \times 1.05}{\frac{200}{10}} + .05$$

$$= 10.775\%$$

57. Net operating Cash flows

$$42 + [(40 + 15)(1 - 40\%)] \quad 75.0$$

$$15\% (150 + 200) \quad - 52.5$$

$$\begin{matrix} \uparrow \\ \text{WACC} \end{matrix} \quad \text{EVA.} \quad 22.5$$

58

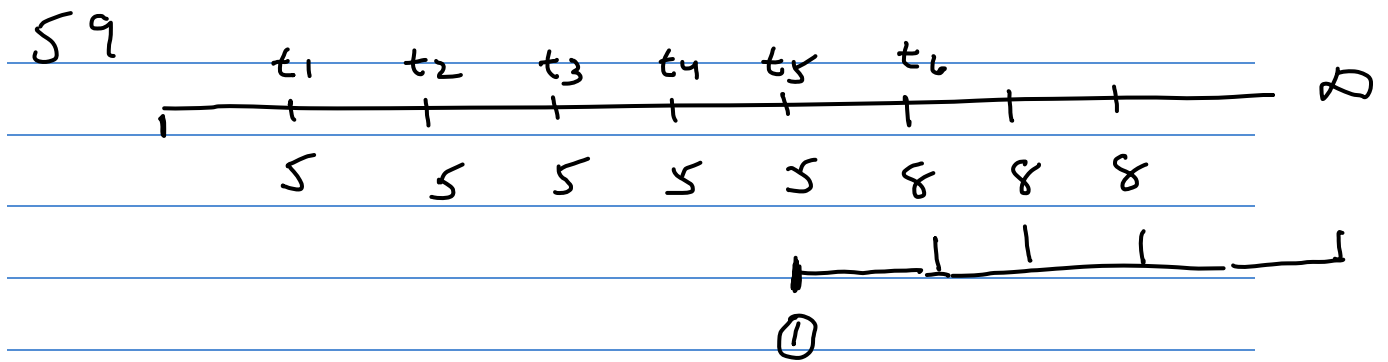
	Wt <sub>j</sub>	Cost	WACC
Debt	.40	8% (1-40%)	1.92
Pref.	.10	9%	.90
Common	.50	15.2%	7.60
			<u>10.42%</u>

$$\begin{aligned}R_j &= R_F + \beta_j (R_M - R_F) \\ &= 8\% + 1.2 (6\%) \\ &= 15.2\%\end{aligned}$$

$$R_M - R_F = 6\%$$

$$R_M = 14\%$$





PV of 8M to 0

$$\frac{\text{pmt}}{\text{disc.}} = \frac{8,000,000}{.10} \rightarrow 80,000,000 \text{ PV to year } 5$$

$$80,000,000 \text{ FV.}$$

$$5 \text{ n}$$

$$10 \text{ i}$$

$$5,000,000 \text{ pmt}$$

$$\text{CPT PV}$$

$$\text{PV} = 68,627,639$$

G0 d

G1 100,000 FV

$$10\% \times 100,000 \times 6/12 = 5000 \text{ pmt}$$

$$8 \times 2 = 16 \text{ n.}$$

$$\frac{12}{2} = 6 \text{ i}$$

CPT PV 89,894

G2.

50,000 FV

$$6\% \times 50,000 \times 6/12 = 1500 \text{ pmt}$$

$$\frac{8\%}{2} = 4 \text{ i}$$

$$20 - 8 = 12 \text{ yrs} \times 2 = 24 \text{ n.}$$

CPT PV 42377

G3 a

$$G4 \text{ DOL} = \frac{SP - VC}{SP - VC - FC}$$

$$400 - 180$$

$$400 - 180 - 90$$

$$= 1.69$$

65 DFL

$$\frac{EBIT}{EBT} = \frac{400 - 180 - 90}{400 - 180 - 90 - 90}$$

↑     ↑  
F/c   int

$$= 3.25$$

66 c.

67 After tax

$$1,000,000 \times (1 - 40\%)$$
$$\begin{array}{r} 4,000,000 \\ \underline{600,000} \\ 4,600,000 \end{array}$$

$$\frac{\text{pmt}}{\text{disc.}} = \frac{4,600,000}{16\%} = 28,750,000 \text{ PV.}$$

