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AcF 214: Principles of Finance

Course Work Assignment 3

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Year	Hataitai	Miramar
0	(100)	(100)
1	10	70
2	30	50
3	60	35
4	80	(10)

Part 1

An *independent project* is one whose cash flows are not affected by the acceptance or rejection of other projects. For example, the taking on of project A does not affect our decision of whether to take on project B or not.

Mutually exclusive projects are a set of projects where only one project can be accepted. For example, if we choose to go ahead with project A, then we can not also proceed with project B.

The Hataitai project is a normal one, since it only has one change of sign in the cash flows over the lifetime of the project, namely a cash outflow in year 0, followed by all positive cash flows in years 1 to 4.

The Miramar project is a non-normal project, since the signs of the cash flows change more than once over the lifetime of the project. There is a negative cash flow in year 1, then positive cash flows in years 1 – 3, followed by a final negative cash flow in year 4.

Part 2

Formula: $$PV_0 = \frac{CF_n}{(1+WACC)^n}$$ where:

$PV_0 =$ Present Value of the Cash Flow
$CF_n =$ Cash Flow at time n
$WACC =$ Weighted Cost of Capital

Hataitai:

Year	Cash Flow	PV of Cash Flow	PV of Cash Flow	∑ Cash Flows
0	(100)	-100	(100)	(100)
1	10	10 / 1.12	8.93	(91.07)
2	30	$30 / (1.12)^2$	23.92	(67.16)
3	60	$60 / (1.12)^3$	42.71	(24.45)
4	80	$80 / (1.12)^4$	50.84	26.39

Therefore, Discounted Payback = $3 + \frac{24.45}{24.45 + 26.39}$ years = 3 + 0.48 = 3.48 years

Miramar:

Year	Cash Flow	PV of Cash Flow	PV of Cash Flow	∑ Cash Flows
0	(100)	-100	(100)	(100)
1	70	70 / 1.12	62.50	(37.50)
2	50	$50 / (1.12)^2$	39.86	2.36
3	35	$35 / (1.12)^3$	24.91	27.27
4	(10)	$-10 / (1.12)^4$	(6.36)	20.91

Therefore, Discounted Payback = $1+\frac{37.50}{37.50+2.36}$ years = 1 + 0.94 = 1.94 years

Pay-back is not a good choice for valuing a project, as it ignores cash flows after the pay-back period. This could be a problem if for example, a project had a pay-back of 2 years, but then had many negative cash flows in later years, by using the pay-back the project would look quite good, when actually it could be very damaging to the firm. Another problem with pay-back is that it ignores the time value of money, but this can easily be overcome, by using discounted cash flows, as in the first part of this question.

Pay-back's advantage is that it is very easy to calculate, and shows which project will pay-back it's cost the fastest.

It should be noted that when we are considering discounted pay-back, that cash flows are susceptible to changes in the interest rate, and for long-term projects this could have a significant bearing on the discounted pay-back period, possibly giving a misleading impression as to the riskiness of the project.

Part 3

Formula: $$NPV = CF_0 + \sum_{j=1}^{n} \frac{CF_j}{(1+k)^j}$$

where:

CF_0 = Cash Flow at Time 0
CF_j = Cash Flow at Time j
k = WACC

Hataitai:

$$NPV = -100 + \frac{10}{1.12} + \frac{30}{(1.12)^2} + \frac{60}{(1.12)^3} + \frac{80}{(1.12)^4}$$

$$NPV = -100 + 8.92 + 23.92 + 42.71 + 50.84$$

$$NPV = \$26.39\text{m}$$

Miramar:

$$NPV = -100 + \frac{70}{1.12} + \frac{50}{(1.12)^2} + \frac{35}{(1.12)^3} - \frac{10}{(1.12)^4}$$

$$NPV = -100 + 62.5 + 39.85 + 24.91 - 6.36$$

$$NPV = \underline{\underline{\$20.92\text{m}}}$$

Since both the projects have positive NPVs, we would accept both projects if they were independent, and the Hataitai project if the two projects are mutually exclusive, since it has a higher NPV than the Miramar project.

Part 4

Formula:

$$\boxed{CF_0 + \sum_{j=1}^{n} \frac{CF_j}{(1+IRR)^j} = 0}$$

where:

$CF_0 =$ Cash Flow at Time 0
$CF_j =$ Cash Flow at Time j
$IRR =$ Internal Rate of Return

Hataitai:

Try: IRR = 20%

$$PV = -100 + \frac{10}{1.20} + \frac{30}{(1.20)^2} + \frac{60}{(1.20)^3} + \frac{80}{(1.20)^4}$$

$$PV = -100 + 8.33 + 20.83 + 34.72 + 38.58 = 2.47$$

Try: IRR = 21%

$$PV = -100 + \frac{10}{1.21} + \frac{30}{(1.21)^2} + \frac{60}{(1.21)^3} + \frac{80}{(1.21)^4}$$

$$PV = -100 + 8.26 + 20.49 + 33.87 + 37.32 = -0.06$$

By Linear Interpolation:

$$\text{IRR} = 20\% + \frac{2.47}{2.47 + 0.06}\% = 20 + 0.98\% = \underline{\underline{20.98\%}}$$

Miramar:

Try: IRR = 26%

$$PV = -100 + \frac{70}{1.26} + \frac{50}{(1.26)^2} + \frac{35}{(1.26)^3} + \frac{-10}{(1.26)^4}$$

$$PV = -100 + 55.56 + 31.49 + 17.50 + -3.97 = 0.58$$

Try: IRR = 27%

$$PV = -100 + \frac{70}{1.27} + \frac{50}{(1.27)^2} + \frac{35}{(1.27)^3} + \frac{-10}{(1.27)^4}$$

$$PV = -100 + 55.12 + 31.00 + 17.09 + -3.84 = -0.64$$

By Linear Interpolation:

$$\text{IRR} = 26\% + \frac{0.58}{0.58 + 0.64}\% = 26 + 0.48\% = \underline{\underline{26.48\%}}$$

For the MIRR calculations, I am assuming that WACC = 12%, as in parts 2 and 3.

Formula:

$$Cost_0 = \frac{\sum FV}{(1 + MIRR)^n}$$

where:

$Cost_0$ = The Initial Cost at Time 0
$MIRR$ = Modified IRR
$\sum FV$ = Future Cash Flows compounded at WACC

Hataitai:

$$\sum FV = 10(1.12)^3 + 30(1.12)^2 + 60(1.12)^1 + 80 = 14.05 + 37.63 + 67.20 + 80 = 198.88$$

$$\text{So, } -100 = \frac{198.88}{(1 + MIRR)^4}$$

$$MIRR = \sqrt[4]{\frac{198.88}{100}} - 1 = 1.1875 - 1 = 0.1875 = \underline{\underline{18.75\%}}$$

Miramar:

$$\sum FV = 70(1.12)^3 + 50(1.12)^2 + 35(1.12)^1 - 10 = 98.34 + 62.72 + 39.20 - 10 = 190.26$$

$$\text{So, } -100 = \frac{190.26}{(1 + MIRR)^4}$$

$$MIRR = \sqrt[4]{\frac{190.26}{100}} - 1 = 1.1745 - 1 = 0.1745 = \underline{\underline{17.45\%}}$$

MIRR is preferred to IRR, since IRR assumes that the cash flows are re-invested at the project's rate of return, where as in practice, it is more likely that the cash flows will be re-invested at the cost of capital (WACC).

Part 5

In order to plot the NPV schedules, it is necessary to first work out some values for each project's NPV at various WACCs.

Hataitai:

Year	*0*	*1*	*2*	*3*	*4*	*NPV*
CF	*-100*	*10*	*30*	*60*	*80*	
$PV_{0\%}$	-100	10.00	30.00	60.00	80.00	*80.00*
$PV_{5\%}$	-100	$\frac{10}{(1.05)} = 9.52$	$\frac{30}{(1.05)^2} = 27.21$	$\frac{60}{(1.05)^3} = 51.83$	$\frac{80}{(1.05)^4} = 65.82$	*54.38*
$PV_{10\%}$	-100	$\frac{10}{(1.10)} = 9.09$	$\frac{30}{(1.10)^2} = 24.79$	$\frac{60}{(1.10)^3} = 45.08$	$\frac{80}{(1.10)^4} = 54.64$	*33.60*
$PV_{15\%}$	-100	$\frac{10}{(1.15)} = 8.70$	$\frac{30}{(1.15)^2} = 22.68$	$\frac{60}{(1.15)^3} = 39.45$	$\frac{80}{(1.15)^4} = 45.74$	*16.57*
$PV_{20\%}$	-100	$\frac{10}{(1.20)} = 8.33$	$\frac{30}{(1.20)^2} = 20.83$	$\frac{60}{(1.20)^3} = 34.72$	$\frac{80}{(1.20)^4} = 38.58$	*2.47*
$PV_{25\%}$	-100	$\frac{10}{(1.25)} = 8.00$	$\frac{30}{(1.25)^2} = 19.20$	$\frac{60}{(1.25)^3} = 30.72$	$\frac{80}{(1.25)^4} = 32.77$	*-9.31*
$PV_{30\%}$	-100	$\frac{10}{(1.30)} = 7.69$	$\frac{30}{(1.30)^2} = 17.75$	$\frac{60}{(1.30)^3} = 27.31$	$\frac{80}{(1.30)^4} = 28.01$	*-19.24*

Miramar:

Year	*0*	*1*	*2*	*3*	*4*	*NPV*
CF	*-100*	*70*	*50*	*35*	*-10*	
$PV_{0\%}$	-100	70.00	50.00	35.00	-10.00	*45.00*
$PV_{5\%}$	-100	$\frac{70}{(1.05)} = 66.67$	$\frac{50}{(1.05)^2} = 45.35$	$\frac{35}{(1.05)^3} = 30.23$	$\frac{-10}{(1.05)^4} = -8.23$	*34.03*
$PV_{10\%}$	-100	$\frac{70}{(1.10)} = 63.64$	$\frac{50}{(1.10)^2} = 41.32$	$\frac{35}{(1.10)^3} = 26.30$	$\frac{-10}{(1.10)^4} = -6.83$	*24.42*
$PV_{15\%}$	-100	$\frac{70}{(1.15)} = 60.87$	$\frac{50}{(1.15)^2} = 37.81$	$\frac{35}{(1.15)^3} = 23.01$	$\frac{-10}{(1.15)^4} = -5.72$	*15.97*
$PV_{20\%}$	-100	$\frac{70}{(1.20)} = 58.33$	$\frac{50}{(1.20)^2} = 34.72$	$\frac{35}{(1.20)^3} = 20.25$	$\frac{-10}{(1.20)^4} = -4.82$	*8.49*
$PV_{25\%}$	-100	$\frac{70}{(1.25)} = 56.00$	$\frac{50}{(1.25)^2} = 32.00$	$\frac{35}{(1.25)^3} = 17.92$	$\frac{-10}{(1.25)^4} = -4.10$	*1.82*
$PV_{30\%}$	-100	$\frac{70}{(1.30)} = 53.85$	$\frac{50}{(1.30)^2} = 29.59$	$\frac{35}{(1.30)^3} = 15.93$	$\frac{-10}{(1.30)^4} = -3.50$	*-4.14*

Project NPV schedules are shown in Appendix I

Comment:

If the two projects are independent, then BIL should take on both projects whenever their NPVs are positive, i.e. accept a project if its IRR $>$ WACC. That is take on the Hataitai project when WACC $<$ 20.98%, and take on the Miramar project providing that WACC $<$ 26.48%.

But, if the two projects are mutually exclusive, then BIL should take on the project that has the highest NPV, providing, of course, that the NPV is positive (i.e. that the project's IRR > WACC). Thus:

If	$0 < \text{WACC} < 15.25\%$	Take on the Hataitai project (only)
If	$15.25\% < \text{WACC} < 26.48\%$	Take on the Miramar project (only)
If	$\text{WACC} > 26.48\%$	Reject both projects

Part 6

Cost of Project = Cost of Asset + Shipping & Installation Costs + ΔNWC

= $100m + $10m + ($2m – $1m)

= $111m

Depreciable Cost = Cost of Asset + Cost of Shipping and Installation

= $100m + $10

= $110m

Part 7

MACRS 3 year class depreciation:

Year	Depreciation %	Depreciation	Depreciation
1	33%	0.33 × $110m	$ 36.3m
2	45%	0.45 × $110m	$ 49.5m
3	15%	0.15 × $110m	$ 16.5m
4	7%	0.07 × $110m	$ 7.7m
	100%		$240.0m

Part 8

Year	1	2	3	4	
Revenue – Costs	$50.00m	$50.00m	$50.00m	$50.00m	
Depreciation	$36.30m	$49.50m	$16.50m	$ 7.70m	
EBIT	$13.70m	$ 0.50m	$33.50m	$42.30m	
Tax @ 30%	$ 4.11m	$ 0.15m	$10.05m	$12.69m	
Net Income	$ 9.59m	$ 0.35m	$23.45m	$29.61m	
Op. Cash Flow	$45.89m	$49.85m	$39.95m	$37.31m	= Net Income + Depreciation

Part 9

Terminal Value Calculation when Book Value = $0:

Book Value	$ 0
Salvage Value	$10m
Taxable	$10m
Tax @ 30%	$ 3m
	$ 7m
Recovered NWC	$ 1m
Terminal Value	$ 8m

Terminal Value Calculation when Book Value = $5m:

Book Value	$ 5.0m
Salvage Value	$10.0m
Taxable	$ 5.0m
Tax @ 30%	$ 1.5m
	$ 3.5m
Recovered NWC	$ 1.0m
Terminal Value	$ 4.5m

If the book value is $5m, then the terminal value of the project is less than the terminal value when the book value is $0. This is because, at the end of the project, the firm still values the asset (it is still in their balance sheet). Therefore, the "profit" on selling the asset is less, since we have to "remove" the asset from the balance sheet, causing a "hit" on the P&L account. I.e. we have to take the book value away from the salvage value to find the gain from selling the asset.

Part 10

Sunk costs are not included in our analysis, since by definition, the firm will incur these costs whatever their action with regard to the acceptance or rejection or the project(s) being considered. Therefore, one can disregard sunk costs, when performing such an analysis.

The same argument holds for interest payments – it does not matter which project(s) we take on – the expense of interest payments will always be incurred. It should be noted that interest payments are already accounted for in the calculation of WACC, so to include them specifically when considering a project would lead to double counting, and thus a possibly misleading analysis result.

When considering whether to accept project Kilbirnie or not, one must also take into account the *opportunity cost* of the income forgone from the Maupuia project. I.e. when calculating the required income of project Kilbirnie, the figure must include compensation for the sales lost from project Maupuia.

Part 11

For the purposes of this answer, I am assuming that the terminal value of the project is \$8m, i.e. that the book value of the asset at the end of the project is \$0.

NPV Calculation:

Formula:

$$NPV = CF_0 + \sum_{j=1}^{n} \frac{CF_j}{(1+k)^j}$$

where:

$CF_0 =$ Cash Flow at Time 0
$CF_j =$ Cash Flow at Time j
$k =$ WACC

Year	Total Cash Flow	Present Value
0	-111.00	$\frac{-111}{(1.12)^0} = -111.00$
1	45.89	$\frac{45.89}{(1.12)^1} = 40.97$
2	49.85	$\frac{49.85}{(1.12)^2} = 39.74$
3	39.95	$\frac{39.95}{(1.12)^3} = 28.44$
4	37.31 + 8.00 = 45.31	$\frac{45.31}{(1.12)^4} = 28.80$

Thus, NPV = -111.00 + 40.97 + 39.74 + 28.44 + 28.80

NPV = \$26.94m

IRR Calculation:

Formula:

$$CF_0 + \sum_{j=1}^{n} \frac{CF_j}{(1+IRR)^j} = 0$$

where:

$CF_0 =$ Cash Flow at Time 0
$CF_j =$ Cash Flow at Time j
$IRR =$ Internal Rate of Return

Thus, need to find IRR in:

$$0 = -111 + \frac{45.89}{(1+IRR)^1} + \frac{49.85}{(1+IRR)^2} + \frac{39.95}{(1+IRR)^3} + \frac{45.31}{(1+IRR)^4}$$

Try IRR = 23%:

$$PV = -111 + \frac{45.89}{(1.23)^1} + \frac{49.85}{(1.23)^2} + \frac{39.95}{(1.23)^3} + \frac{45.31}{(1.23)^4}$$
$$PV = -111 + 37.31 + 32.95 + 21.47 + 19.80 = 0.52$$

Try IRR = 24%:

$$PV = -111 + \frac{45.89}{(1.24)^1} + \frac{49.85}{(1.24)^2} + \frac{39.95}{(1.24)^3} + \frac{45.31}{(1.24)^4}$$
$$PV = -111 + 37.01 + 32.42 + 20.95 + 19.16 = -1.45$$

By Linear Interpolation:

$$\text{IRR} = 23\% + \frac{0.52}{0.52 + 1.45}\% = 23 + 0.26\% = \underline{\underline{23.26\%}}$$

MIRR Calculation:

Formula: $$Cost_0 = \frac{\sum FV}{(1 + MIRR)^n}$$ where:

$Cost_0 =$ The Initial Cost at Time 0
$MIRR =$ Modified IRR
$\sum FV =$ Future Cash Flows compounded at WACC

$$\sum FV = 45.89(1.12)^3 + 49.85(1.12)^2 + 39.95(1.12)^1 + 45.31 = 64.47 + 62.53 + 44.74 + 45.31 = 217.06$$

$$\text{So, } -111 = \frac{217.06}{(1 + MIRR)^4}$$

$$MIRR = \sqrt[4]{\frac{217.06}{111}} - 1 = 1.1825 - 1 = 0.1825 = \underline{\underline{18.25\%}}$$

Decision:

Decision is to accept (providing that opportunity cost = 0), since:

NPV > 0;
IRR > MIRR > WACC

Also, this project should be accepted before either of the other projects are accepted, since it has the highest NPV of the three projects, and NPV is "always" the biggest factor influencing the acceptance or rejection of projects.

Part 12

If inflation expectations are 2% and are built into the WACC, then the NPV of the projects will be reduced, since they are not built into the cash flows. However, in this example, the NPVs are sufficiently high enough that an inflation expectation of 2% does not affect our decision.

Part 13

¬ Please note that the NPV calculations and graphs for this question can be found in *Appendix II* or on the floppy disk.

Sensitivity to changes in Sales:

Baseline Sales = $80m

Therefore,	@ –5%, Sales = $80m × 0.95 =	$76m	NPV = $18.44m
	@ +0%, Sales = $80m × 1.00 =	$80m	NPV = $26.94m
	@ +5%, Sales = $80m × 1.05 =	$84m	NPV = $35.45m

Sensitivity to changes in Costs:

Baseline Costs = $30m

Therefore,	@ –5%, Costs = $30m × 0.95 =	$28.5m	NPV = $30.13m
	@ +0%, Costs = $30m × 1.00 =	$30.0m	NPV = $26.94m
	@ +5%, Costs = $30m × 1.05 =	$31.5m	NPV = $23.76m

Sensitivity to changes in WACC:

Baseline WACC = 12%

Therefore,	@ –5%, WACC = 12% × 0.95 =	11.4%	NPV = $28.68m
	@ +0%, WACC = 12% × 1.00 =	12.0%	NPV = $26.94m
	@ +5%, WACC = 12% × 1.05 =	12.6%	NPV = $25.24m

Comments:

High-risk projects tend to have more sensitive NPVs than low-risk projects. The steeper the slope of the graph, the more sensitive the NPV is to a change in the variable being considered. Therefore, the steeper the slope, the more risky a project is.

With respect to sales, the slope = $\left|\frac{35.45 - 18.44}{10}\right| = 1.701$, so the project is quite sensitive to changes in sales, and hence quite risky.

With regard to costs, the slope = $\left|\dfrac{23.76-30.13}{10}\right|$=0.637, so the project is still sensitive to changes in costs, but the effect on NPV is not as significant as the sales effects.

With reference to WACC, the slope = $\left|\dfrac{25.24-28.68}{10}\right|$ = 0.344, so the project is not very sensitive in changes to the weighted average cost of capital.

By plotting the three schedules on the same set of axes, (see Appendix II), it is clear that the above result holds.

Part 14

Again, NPV Calculations can be found in *Appendix III* or on the floppy disk, as I see no educational benefit in performing lots of repetitive calculations.

Sales = \$ 50m $\Rightarrow$ NPV = <u>\$-36.84m</u> - This is the *worst case NPV*

Sales = \$ 80m $\Rightarrow$ NPV = \$ 26.94m

Sales = \$100m $\Rightarrow$ NPV = <u>\$ 69.47m</u> - This is the *best case NPV*

Expected NPV Calculation:

Formula: $$\hat{NPV} = \sum_{i=1}^{n} p_i NPV_i$$

Expected NPV = (0.2 × -36.84) + (0.6 × 26.94) + (0.2 × 69.47)

Expected NPV = -7.37 + 16.16 + 13.89

Expected NPV = <u>\$22.68m</u>

Expected Standard Deviation Calculation:

Formula: $$\sigma = \sqrt{\sum_{i=1}^{n} p_i (NPV_i - \hat{NPV})^2}$$

$$\sigma = \sqrt{(0.2\times[-36.84-22.68]^2)+(0.6\times[26.94-22.68]^2)+(0.2\times[69.47-22.68]^2)}$$

$$\sigma = \sqrt{708.53+10.89+437.86}$$

σ= <u>\$34.02m</u>

Coefficient of Variation Calculation:

Formula: $CV = \frac{\sigma}{\hat{NPV}}$

$$CV = \frac{34.02}{22.68}$$

$CV =$ $\underline{\underline{1.50}}$

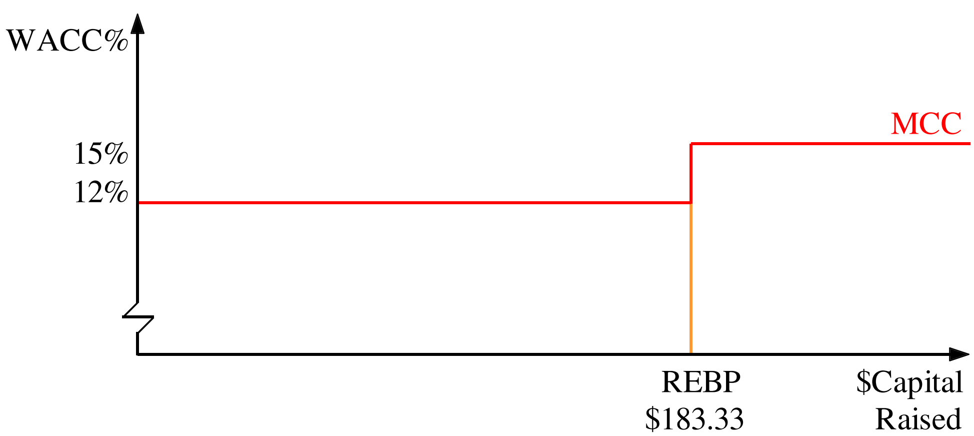
Part 15

Retained Earnings Break Point Calculation:

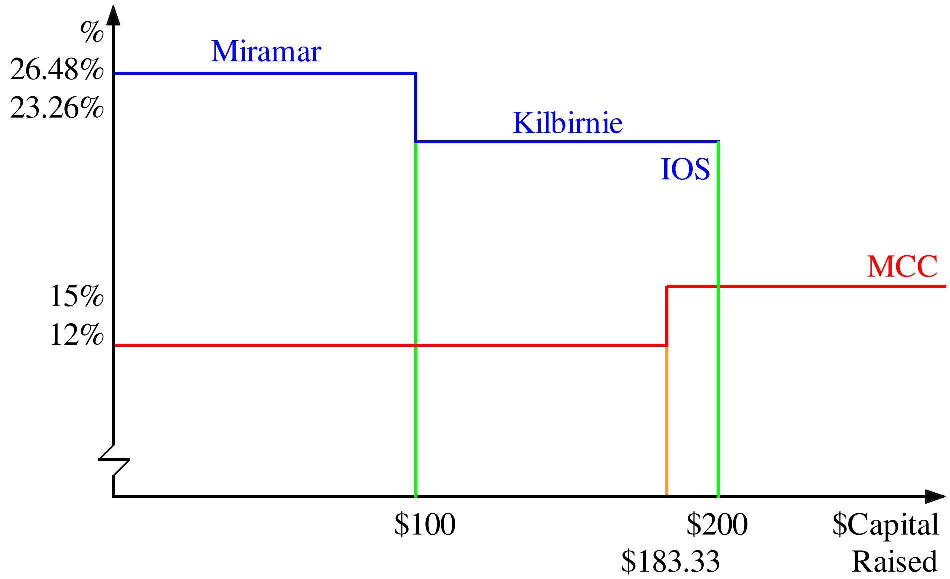
Formula: $REBP = \frac{R.Earnings}{\%.Equity}$

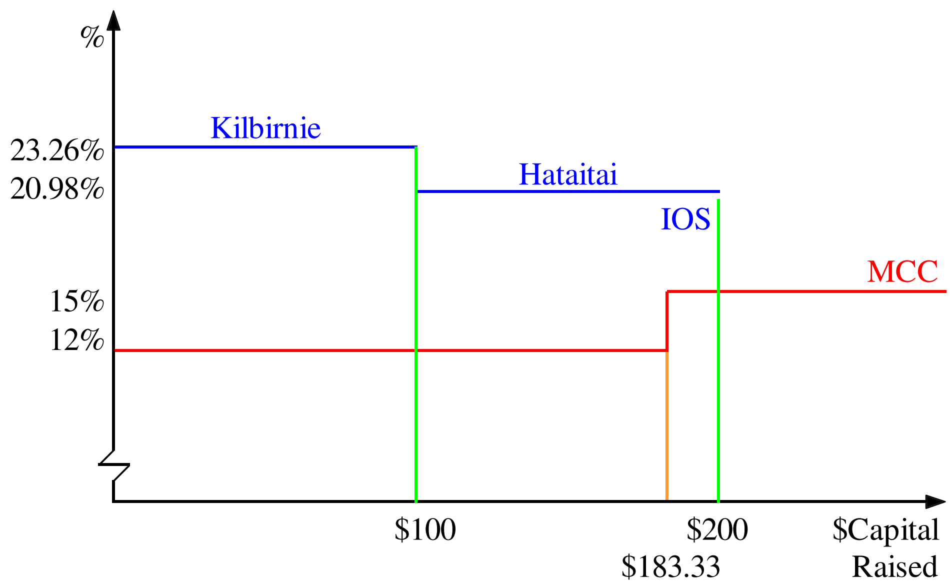
$$REBP = \frac{\$110m}{60\%} = \$183\tfrac{1}{3}\text{ m}$$

Thus, MCC Schedule is:



IOS Schedules (and MCC Schedule):





Recommendation:

Recommendation is to accept projects Miramar and Kilbrinie as our first choice. Second choice is to accept Kilbirnie and Hataitai. This is because the IRRs of all the projects are always greater than the WACC / MCC.

Appendix II

Varying Sales

		Year 0	Year 1	Year 2	Year 3	Year 4	
	Sales		76.00	76.00	76.00	76.00	
	Costs		30.00	30.00	30.00	30.00	
	Sales - Costs		46.00	46.00	46.00	46.00	
	Depreciation		36.30	49.50	16.50	7.70	
	EBIT		9.70	-3.50	29.50	38.30	
	Tax @ 30%		2.91	-1.05	8.85	11.49	
	Op. Cash Flow		6.79	-2.45	20.65	26.81	
	Other Cash Flows					8.00	
	Total Cash Flows	-111.00	43.09	47.05	37.15	42.51	
WACC							NPV
12.00%		-111.00	38.47	37.51	26.44	27.02	18.44

		Year 0	Year 1	Year 2	Year 3	Year 4	
	Sales		80.00	80.00	80.00	80.00	
	Costs		30.00	30.00	30.00	30.00	
	Sales - Costs		50.00	50.00	50.00	50.00	
	Depreciation		36.30	49.50	16.50	7.70	
	EBIT		13.70	0.50	33.50	42.30	
	Tax @ 30%		4.11	0.15	10.05	12.69	
	Op. Cash Flow		9.59	0.35	23.45	29.61	
	Other Cash Flows					8.00	
	Total Cash Flows	-111.00	45.89	49.85	39.95	45.31	
WACC							NPV
12.00%		-111.00	40.97	39.74	28.44	28.80	26.94

		Year 0	Year 1	Year 2	Year 3	Year 4	
	Sales		84.00	84.00	84.00	84.00	
	Costs		30.00	30.00	30.00	30.00	
	Sales - Costs		54.00	54.00	54.00	54.00	
	Depreciation		36.30	49.50	16.50	7.70	
	EBIT		17.70	4.50	37.50	46.30	
	Tax @ 30%		5.31	1.35	11.25	13.89	
	Op. Cash Flow		12.39	3.15	26.25	32.41	
	Other Cash Flows					8.00	
	Total Cash Flows	-111.00	48.69	52.65	42.75	48.11	
WACC							NPV
12.00%		-111.00	43.47	41.97	30.43	30.57	35.45

Summary

Sales	NPV
-5%	18.44
+0%	26.94
+5%	35.45

Varying Costs

	Year 0	Year 1	Year 2	Year 3	Year 4	
Sales		80.00	80.00	80.00	80.00	
Costs		28.50	28.50	28.50	28.50	
Sales - Costs		51.50	51.50	51.50	51.50	
Depreciation		36.30	49.50	16.50	7.70	
EBIT		15.20	2.00	35.00	43.80	
Tax @ 30%		4.56	0.60	10.50	13.14	
Op. Cash Flow		10.64	1.40	24.50	30.66	
Other Cash Flows					8.00	
Total Cash Flows	-111.00	46.94	50.90	41.00	46.36	
WACC						NPV
12.00%	-111.00	41.91	40.58	29.18	29.46	30.13

	Year 0	Year 1	Year 2	Year 3	Year 4	
Sales		80.00	80.00	80.00	80.00	
Costs		30.00	30.00	30.00	30.00	
Sales - Costs		50.00	50.00	50.00	50.00	
Depreciation		36.30	49.50	16.50	7.70	
EBIT		13.70	0.50	33.50	42.30	
Tax @ 30%		4.11	0.15	10.05	12.69	
Op. Cash Flow		9.59	0.35	23.45	29.61	
Other Cash Flows					8.00	
Total Cash Flows	-111.00	45.89	49.85	39.95	45.31	
WACC						NPV
12.00%	-111.00	40.97	39.74	28.44	28.80	26.94

		Year 0	Year 1	Year 2	Year 3	Year 4	
	Sales		80.00	80.00	80.00	80.00	
	Costs		31.50	31.50	31.50	31.50	
	Sales - Costs		48.50	48.50	48.50	48.50	
	Depreciation		36.30	49.50	16.50	7.70	
	EBIT		12.20	-1.00	32.00	40.80	
	Tax @ 30%		3.66	-0.30	9.60	12.24	
	Op. Cash Flow		8.54	-0.70	22.40	28.56	
	Other Cash Flows					8.00	
	Total Cash Flows	-111.00	44.84	48.80	38.90	44.26	
WACC							NPV
12.00%		-111.00	40.04	38.90	27.69	28.13	23.76

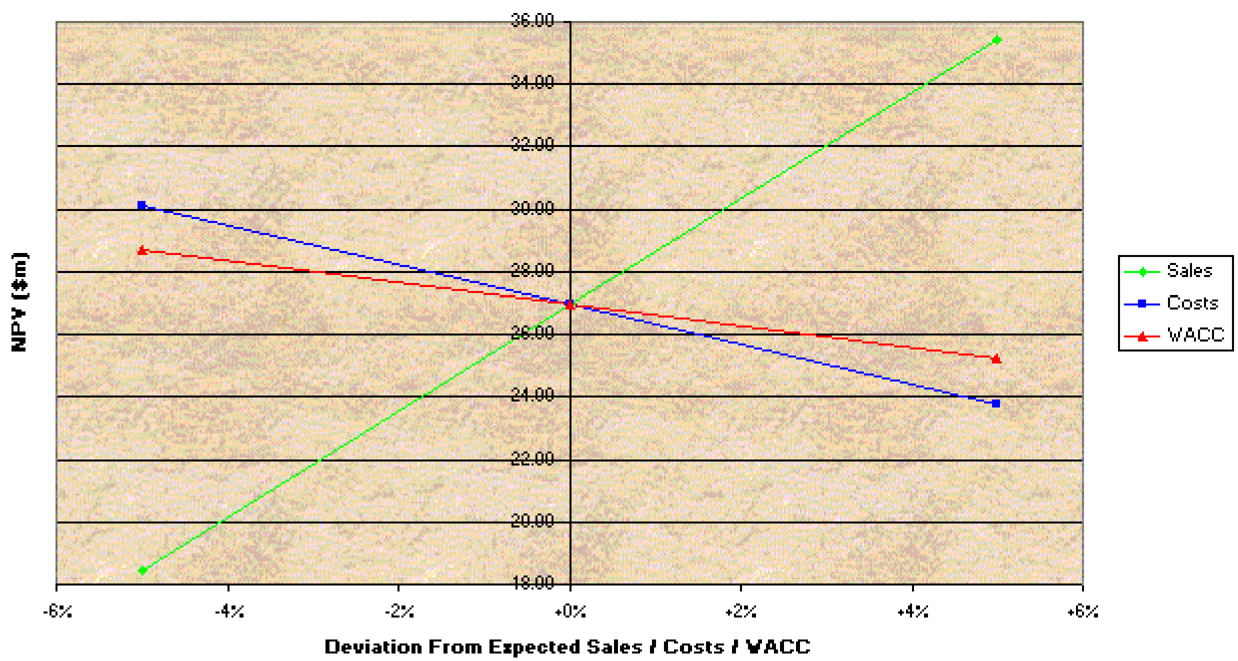
Summary

Sales	NPV
-5%	30.13
+0%	26.94
+5%	23.76

Varying WACC

		Year 0	Year 1	Year 2	Year 3	Year 4	
	Sales		80.00	80.00	80.00	80.00	
	Costs		30.00	30.00	30.00	30.00	
	Sales - Costs		50.00	50.00	50.00	50.00	
	Depreciation		36.30	49.50	16.50	7.70	
	EBIT		13.70	0.50	33.50	42.30	
	Tax @ 30%		4.11	0.15	10.05	12.69	
	Op. Cash Flow		9.59	0.35	23.45	29.61	
	Other Cash Flows					8.00	
	Total Cash Flows	-111.00	45.89	49.85	39.95	45.31	
	WACC						NPV
-5%	11.40%	-111.00	41.19	40.17	28.90	29.42	28.68
+0%	12.00%	-111.00	40.97	39.74	28.44	28.80	26.94
+5%	12.60%	-111.00	40.75	39.32	27.98	28.19	25.24

Graph To Show Sensitivity of NPV to Sales, Costs and WACC



Appendix III

Varying Sales

	Year 0	Year 1	Year 2	Year 3	Year 4	
Sales		50.00	50.00	50.00	50.00	
Costs		30.00	30.00	30.00	30.00	
Sales - Costs		20.00	20.00	20.00	20.00	
Depreciation		36.30	49.50	16.50	7.70	
EBIT		-16.30	-29.50	3.50	12.30	
Tax @ 30%		-4.89	-8.85	1.05	3.69	
Op. Cash Flow		-11.41	-20.65	2.45	8.61	
Other Cash Flows					8.00	
Total Cash Flows	-111.00	24.89	28.85	18.95	24.31	
WACC						NPV
12.00%	-111.00	22.22	23.00	13.49	15.45	-36.84

	Year 0	Year 1	Year 2	Year 3	Year 4	
Sales		80.00	80.00	80.00	80.00	
Costs		30.00	30.00	30.00	30.00	
Sales - Costs		50.00	50.00	50.00	50.00	
Depreciation		36.30	49.50	16.50	7.70	
EBIT		13.70	0.50	33.50	42.30	
Tax @ 30%		4.11	0.15	10.05	12.69	
Op. Cash Flow		9.59	0.35	23.45	29.61	
Other Cash Flows					8.00	
Total Cash Flows	-111.00	45.89	49.85	39.95	45.31	
WACC						NPV
12.00%	-111.00	40.97	39.74	28.44	28.80	26.94

		Year 0	Year 1	Year 2	Year 3	Year 4	
	Sales		100.00	100.00	100.00	100.00	
	Costs		30.00	30.00	30.00	30.00	
	Sales - Costs		70.00	70.00	70.00	70.00	
	Depreciation		36.30	49.50	16.50	7.70	
	EBIT		33.70	20.50	53.50	62.30	
	Tax @ 30%		10.11	6.15	16.05	18.69	
	Op. Cash Flow		23.59	14.35	37.45	43.61	
	Other Cash Flows					8.00	
	Total Cash Flows	-111.00	59.89	63.85	53.95	59.31	
WACC							NPV
12.00%		-111.00	53.47	50.90	38.40	37.69	69.47

Summary

Sales	NPV
50	-36.84
80	26.94
100	69.47