

## **Chapter 13**

### **E13.11 Investment Opportunities**

(i)

<b>Year</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>Total</b>
<b>Figures in £000</b>						
<b>Project A</b>						
Cash inflows		50	40	30	10	130
Capital costs	(100)					(100)
Net cash flow	(100)	50	40	30	10	30
10% discount factor	1.00	0.91	0.83	0.75	0.68	
<b>Present value</b>	(100)	45.5	33.2	22.5	6.8	8.0
<b>Project B</b>						
Cash inflows		20	40	50	60	170
Capital costs	(100)					(100)
Net cash flow	(100)	20	40	50	60	70
15% discount factor	1.00	0.87	0.76	0.66	0.57	
<b>Present value</b>	(100)	17.4	30.4	33.0	34.2	15.0

(ii)

#### **NPVs**

Project A + £8,000.

Project B + £15,000.

Project A and project B may be considered, both having a positive NPV.

(iii)

You should refer to the sections in Chapter 13 on investment appraisal criteria, advantages and disadvantages to check your solution.

**E13.12 Investment Opportunities**

(i)

<b>Year</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>Total</b>
<b>Figures in £000</b>						
<b>Project A</b>						
Net cash flow	(100)	50	40	30	10	30
10% discount factor	1.00	0.91	0.83	0.75	0.68	
<b>Present value</b>	(100)	45.5	33.2	22.5	6.8	8.0
20% discount factor	1.00	0.83	0.69	0.58	0.48	
<b>Present value</b>	(100)	41.5	27.6	17.4	4.8	(8.7)
<b>Project B</b>						
Net cash flow	(100)	20	40	50	60	70
15% discount factor	1.00	0.87	0.76	0.66	0.57	
<b>Present value</b>	(100)	17.4	30.4	33.0	34.2	15.0
20% discount factor	1.00	0.83	0.69	0.58	0.48	
<b>Present value</b>	(100)	16.6	27.6	29.0	28.8	2.0

Interpolation using the NPVs at 20% and at 10%

**Project A**

$$\frac{8.7}{x} = \frac{8.0}{(10 - x)}$$

$$87 - 8.7x = 8.0x$$

$$87 = 16.7x$$

$$x = 5.21$$

**IRR** = 20% - 5.21% = 14.79%

Extrapolation using the NPVs at 20% and at 15%

**Project B**

$$\frac{2}{x} = \frac{15}{(5 + x)}$$

$$10 + 2x = 15x$$

$$10 = 13x$$

$$x = 0.77$$

**IRR** = 20% + 0.77% = 20.77%

(ii)

Using the criteria of highest IRR Project B should be chosen.

(iii)

You should refer to the sections in Chapter 13 on investment appraisal criteria, advantages and disadvantages to check your solution.