HW 9 More Discounting

Wednesday, November 4, 2020 3:30 PM

Passed solution review

A project has benefits and costs as shown in the table below. You will probably want to do these calculations in a spreadsheet. Assuming you do, include a copy of the relevant portion of the spreadsheet, neatly formatted, labeled, and explained, with your answers.

Time	0	1	2	3	4	5	6	7
Cost	25	40	10	5	5	5	5	20
Benefit	0	0	10	25	45	35	25	5

a. Assuming time 0 is right now and every benefit and cost is received at exactly the time indicated, calculate the NPV if i=0.06.

Time	0	1	2	3	4	5	6	7	Total
Cost	25	40	10	5	5	5	5	20	
Benefit	0	0	10	25	45	35	25	5	
	-25.00	-37.74	0.00	16.79	31.68	22.42	14.10	-9.98	12.28

b. Continuing from (a), what discount rate makes the NPV 0?

Time	0	1	2	3	4	5	6	7	Total
Cost	25	40	10	5	5	5	5	20	
Benefit	0	0	10	25	45	35	25	5	
Test Value									
0.1163	-25.00	-35.83	0.00	14.38	25.76	17.31	10.34	-6.94	0.00

c. Assume time 0 is right now and that benefits and costs benefits and costs are spread more or less evenly over the period following where they are listed. For example the cost of 25 at time 0 represents expenditures spread out evenly between t=0 and t=1. Estimate the NPV if i=0.06.

	A	B	C	D	E	F	G	H	I	J
1	Time	0.5	1.5	2.5	3.5	4.5	5.5	6.5	7.5	Total
2	Cost	25	40	10	5	5	5	5	20	
3	Benefit	0	0	10	25	45	35	25	5	
4										
5	Test Value									
6	0.06	-24.28	-36.65	0.00	16.31	30.77	21.77	13.69	-9.69	11.93

d. Continuing from (c), at what discount rate would the NPV be 0?

	A	B	C	D	E	F	G	H	I	J
1	Time	0.5	1.5	2.5	3.5	4.5	5.5	6.5	7.5	Total
2	Cost	25	40	10	5	5	5	5	20	
3	Benefit	0	0	10	25	45	35	25	5	
4										
5	Test Value									
6	0.1163118023	-23.66	-33.91	0.00	13.61	24.38	16.38	9.78	-6.57	0.00