

Workshop 9. Zhang Qianru(A0176634X), Lin Du(A0122250B)

Question 1.

At Scenario Number equals to 100, the expected profit is 215929.85. As we increase the number of scenarios, the values we are getting should be closer to the real value.

Scenario Number	Expected Profit	Expected Sales	Expected Lost Sales	Stockout Probability	Expected Leftover inventory
100	215929.85	2977.42	98.30	0.19	1113.17
200	217987.18	2989.67	108.96	0.20	1059.30
1000	219833.87	3016.59	120.58	0.20	1074.68
10000	222367.67	3061.35	131.30	0.20	1127.02

Question 2.

By changing the beta from 0.9 to 0.999 we are moving towards risk aversion. At beta=0.999, it is same as worst scenario where the expected profit is 0, not to order anything.

Beta	Expected Profit	Expected Sales	Expected Lost Sales	Stockout Probability	Expected Leftover inventory
0.9	118747.89	1498.01	1577.70	0.91	54.66
0.99	0	0	3075.72	0.99	0
0.999	0	0	3075.72	0.99	0

Question 3

By changing the beta from 0 to 0.99999, we can get the different results of risk aversion, risk neutral, worst case.

Beta is 0, CVAR is the same as the expected profit.

Beta is 0.99999, CVAR is the same as the worst case profit, and the expected profit is 0, and should order nothing.

Beta	Expected Profit	Expected Sales	Expected Lost Sales	Stockout Probability	Expected Leftover inventory
0	215929.85	2977.42	98.30	0.19	1113.17
0.25	209901.11	2798.67	277.05	0.39	699.61
0.5	188119.71	2430.25	315.01	0.60	645.47
0.75	149583.41	1899.31	1176.41	0.79	118.07
0.95	100578.84	1266.96	1808.75	0.96	38.91
0.99999	0	0	3075.72	0	0

At Beta = 0.95

Salvage	Expected Profit	Expected Sales	Expected Lost Sales	Stockout Probability	Expected Leftover inventory
50	16746.84	212.22	2863.50	0.98	3.84
90	100578.84	1266.96	1808.75	0.96	38.91

Change Salvage value from 90 to 50, the expected profit will be less, and the stock out probability is higher.