Workshop 11

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1. TASK 1 – Risk-Neutral

Scenarios	100	200	1000	10000
Expected Sales	2977.42	2989.67	3016.59	3061.35
Expected Lost Sales	98.30	108.96	120.58	131.30
Stockout Probability	0.19	0.2	0.2	0.2
Expected leftover Inventory	1113.17	1059.30	1074.68	1127.02

Both the expected sales and the expected lost sales increase and the stockout probability have the trend to be 0.2. The reason might be that increasing scenarios would bring more outliers.

2. TASK 2 – CV@R

1000 Scenarios\Beta	0.9	0.99	0.999
Expected Sales	1566.386	165.728	0
Expected Lost Sales	1570.791	2971.449	3137.177
Stockout Probability	0.920	0.992	0.997
Expected leftover Inventory	46.289	0.823	0
V@R	129014.023	13324.093	0
CV@R	82725.058	5095.498	0

Higher the beta, the lower confidence level, considering less high profit scenarios, thus the lower CV@R / V@R.

3. TASK 3 – General Model

Beta	0.0	0.25	0.50	0.75	0.95	0.99999
Expected Profit	219833.9	213636.4	194521.6	162559.1	90369.6	0
Expected Sales	3016.5	2828.4	2508.4	2062.4	1134.8	0
Expected Lost Sales	120.7	308.8	629.0	1074.7	2002.4	3137.177
Stockout Probability	0.200	0.400	0.599	0.799	0.960	0.997
Expected leftover Inventory	1074.1	631.7	307.5	121.8	20.6	0
V@R	327247.1	276803.1	225267.6	174736.3	92431.3	0
CV@R	219833.9	192580.8	163775.7	126027.5	51197.7	0

When beta = 0, the confidence level is 100%, the whole profit distribution/ scenarios are taken into consideration, thus the CV@R = the expected profit. While when beta = 0.99999, the confidence level is close to 0, which means that we only consider the worst scenario. Thus, the CV@R of beta = 0.99999, the CV@R = worst case profit = 0.