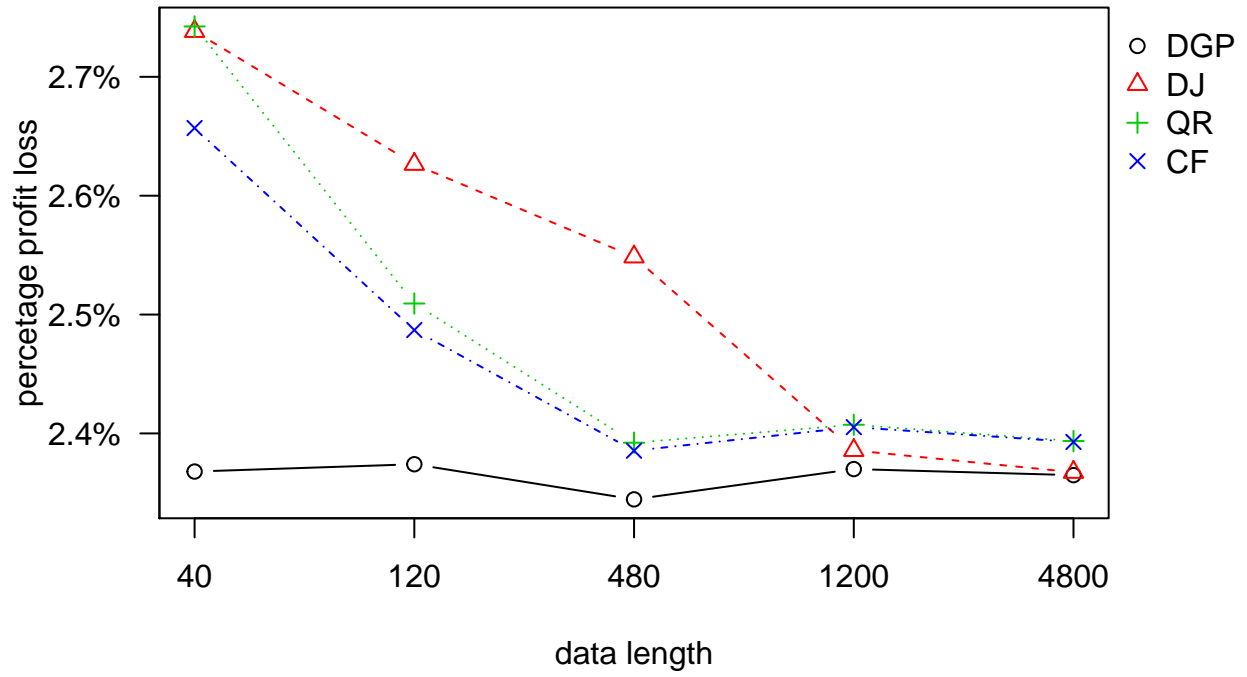# linear norm plot

Joshua

15/05/2020
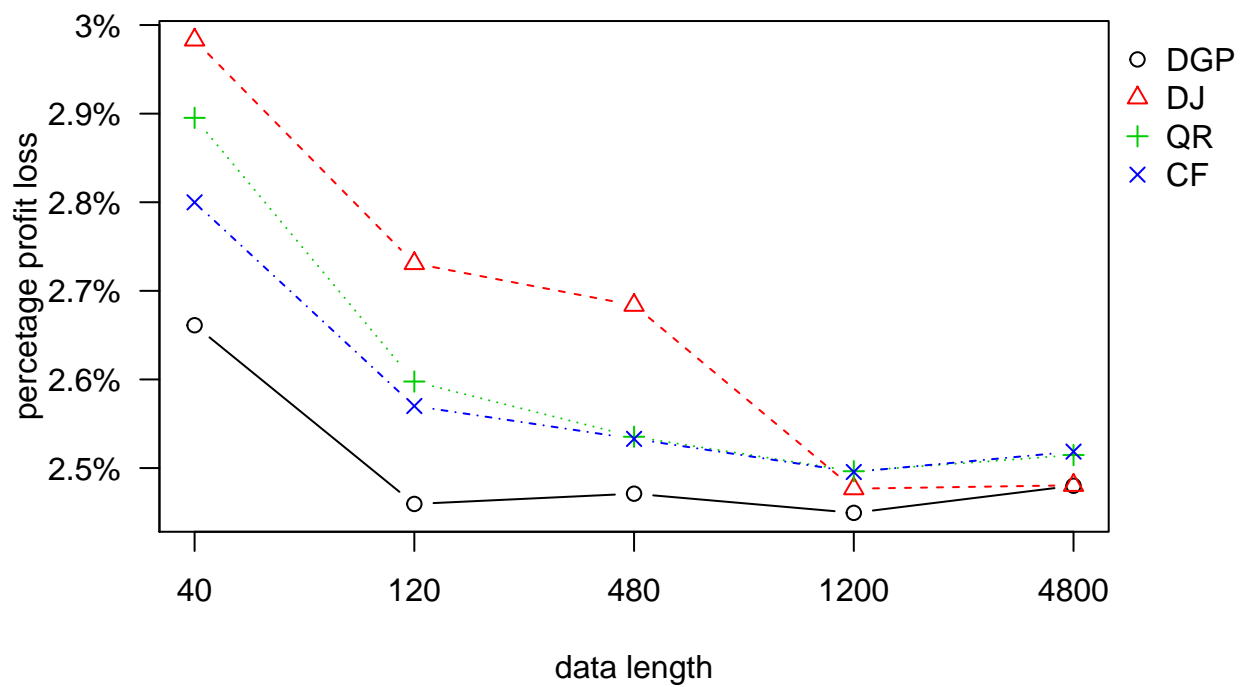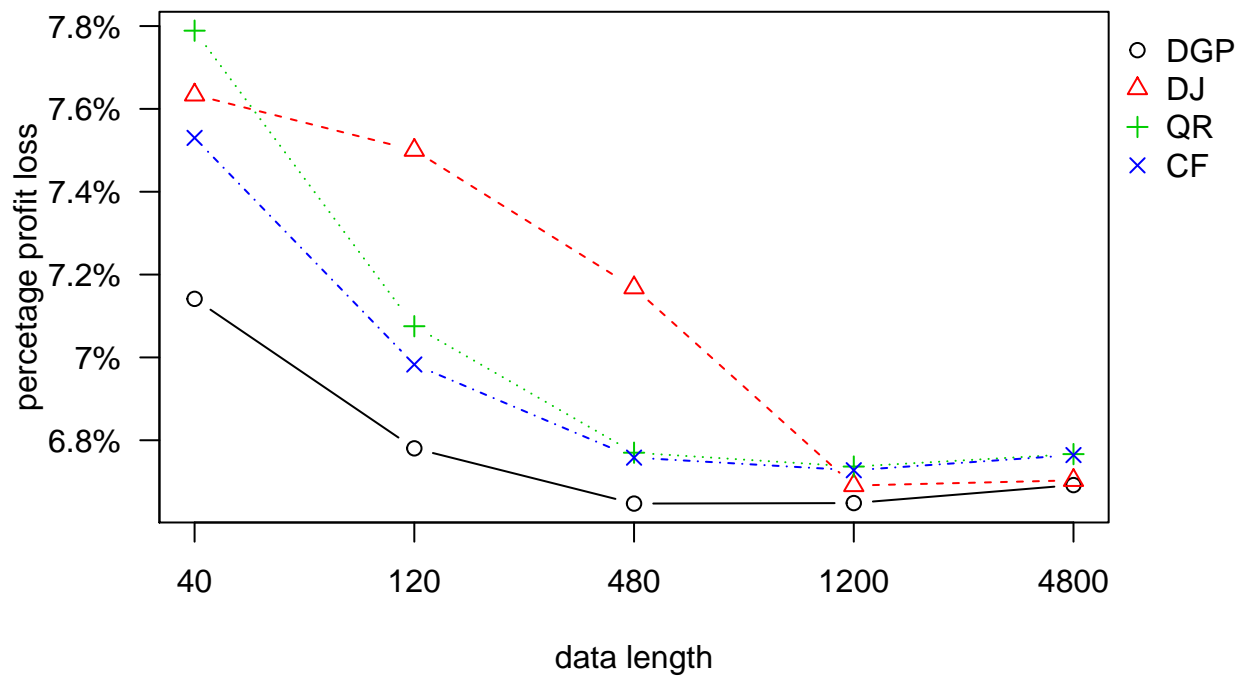
Table 1: Inventory Error

Data size	Target service level=0.5				Target service level=0.63				Target service level=0.3			
	DGP	disjoint	quantile	proposed	DGP	disjoint	quantile	proposed	DGP	disjoint	quantile	proposed
40	0.38	30.38	0.34	0.46	-65.82	-17.8	-28.48	-28.99	103.25	105.54	53.34	48.81
	(100.28)	(114.25)	(116.91)	(112.95)	(100.44)	(114.24)	(117.59)	(113.16)	(100.01)	(114.73)	(117.32)	(112.49)
120	-0.95	8.48	-1.04	-1.09	-45.61	-31.08	-33.68	-32.57	70.72	73.58	52.57	50.89
	(100.87)	(111.91)	(106.27)	(105.35)	(100.29)	(112.8)	(106.45)	(105.07)	(99.24)	(110.93)	(104.96)	(103.62)
480	0.19	3	0.22	0.23	-37.19	-35.73	-34.12	-33.84	56.99	60.59	52.51	51.94
	(99.55)	(108.38)	(101.71)	(101.42)	(99.37)	(108.15)	(101.56)	(101.33)	(100.21)	(109.01)	(102.56)	(102.33)
1200	1	2.22	0.96	0.98	-36.64	-34.92	-35.77	-35.52	53.58	54.35	52.03	51.67
	(100.58)	(101.45)	(102.15)	(102.09)	(99.69)	(100.72)	(101.12)	(101.01)	(99.67)	(100.79)	(101.21)	(101.21)
4800	-1.11	-0.7	-1.17	-1.18	-35.2	-34.81	-35.27	-35.08	51.64	51.93	51.84	51.62
	(100.52)	(100.7)	(101.66)	(101.64)	(100.14)	(100.36)	(101.23)	(101.23)	(100.18)	(100.28)	(101.47)	(101.54)

Table 2: p-value of Wilcoxon Test between data size 1200 and 4800

Target service level	DGP	disjoint	quantile	proposed
0.5	0.0244507	0.0090546	0.0784086	0.0393982
0.63	0.2033235	0.7949392	0.8106588	0.9501898
0.3	0.2163362	0.0498548	0.8617589	0.4927552
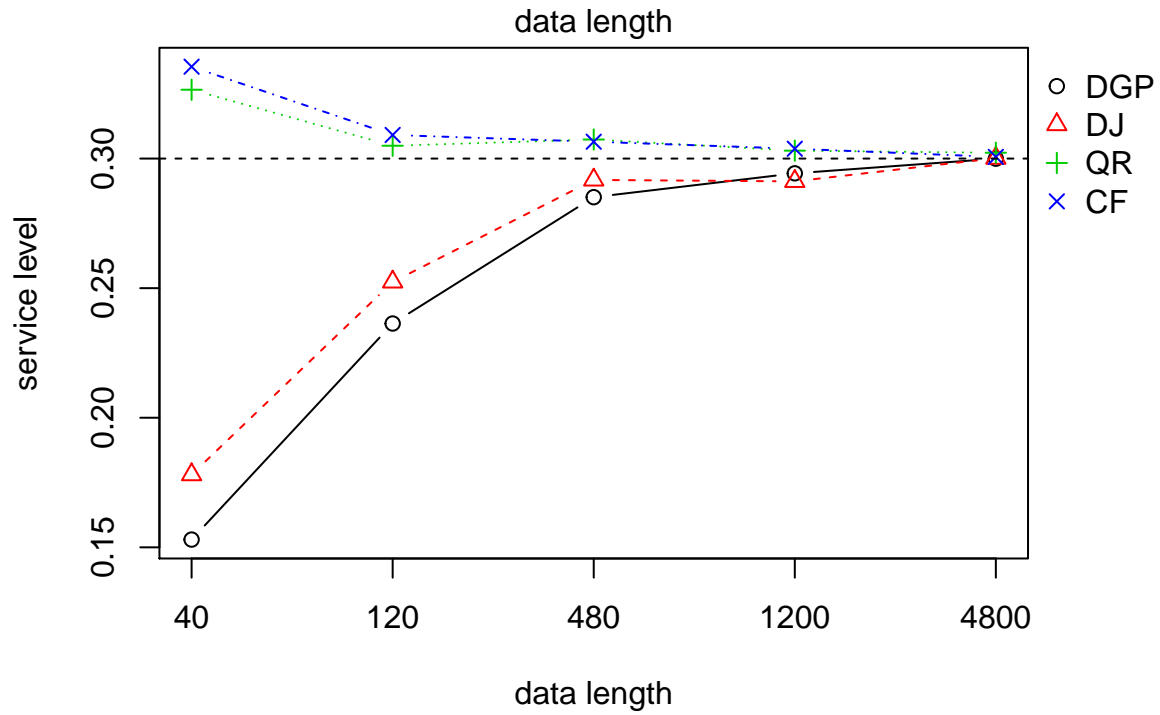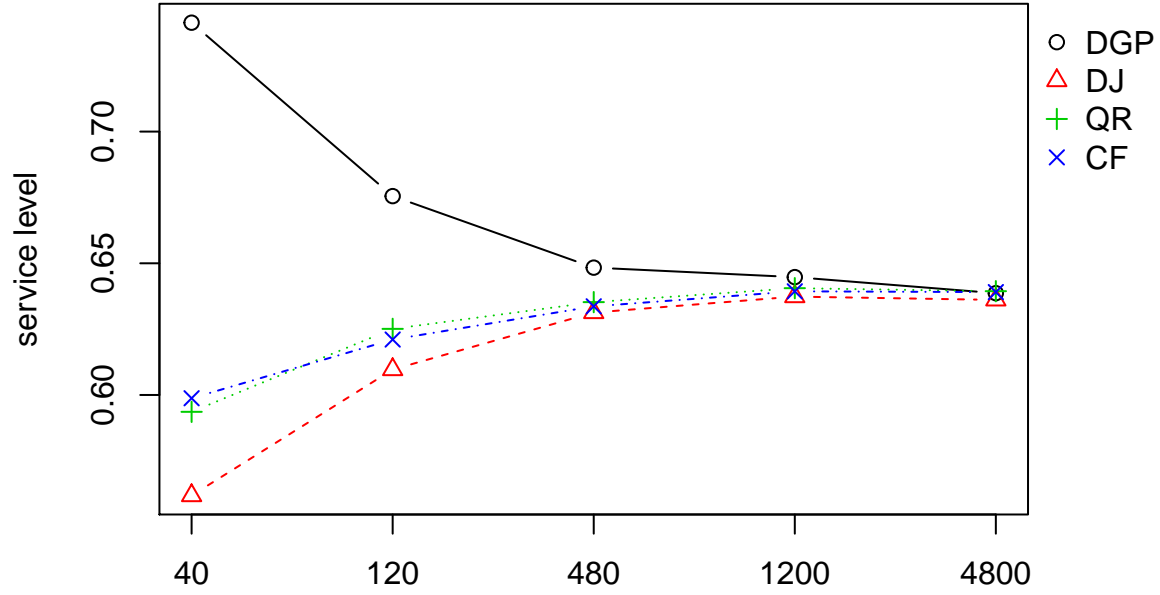

```
##              DGP         DJ         QR         CF
## 40    0.9739576 0.9587432 0.9694653 0.9704274
```

Table 3: Target service level effect (n=40)

Target service level	Percentage profit loss				Average service level			
	DGP	disjoint	quantile	proposed	DGP	disjoint	quantile	proposed
0.5	2.37%	2.74%	2.74%	2.66%	0.500	0.395	0.502	0.500
0.63	7.14%	7.63%	7.79%	7.53%	0.741	0.562	0.594	0.599
0.3	2.66%	2.98%	2.90%	2.80%	0.153	0.178	0.327	0.335

Table 4: Target service level effect (n=480)

Target service level	Percentage profit loss				Average service level			
	DGP	disjoint	quantile	proposed	DGP	disjoint	quantile	proposed
0.5	2.34%	2.55%	2.39%	2.39%	0.501	0.492	0.498	0.497
0.63	6.65%	7.17%	6.77%	6.76%	0.648	0.631	0.635	0.634
0.3	2.47%	2.68%	2.54%	2.53%	0.285	0.292	0.307	0.306

```
## 120  0.9744015 0.9679010 0.9728337 0.9731264
## 480  0.9742795 0.9707362 0.9737452 0.9738208
## 1200 0.9737634 0.9729700 0.9733849 0.9734056
## 4800 0.9745371 0.9742965 0.9742709 0.9742858

##           DGP        DJ        QR        CF
## 40    0.9903111 0.9757714 0.9780703 0.9792021
## 120   0.9865163 0.9797998 0.9822862 0.9823411
## 480   0.9848323 0.9822811 0.9835870 0.9835376
## 1200  0.9847132 0.9839716 0.9841744 0.9841170
## 4800  0.9841651 0.9839729 0.9839263 0.9838614

##           DGP        DJ        QR        CF
## 40    0.9259200 0.9212838 0.9481836 0.9514379
## 120   0.9439190 0.9395921 0.9515363 0.9527229
## 480   0.9506548 0.9465879 0.9523105 0.9526926
## 1200  0.9525118 0.9516110 0.9528853 0.9531534
## 4800  0.9532435 0.9529980 0.9528792 0.9530302
```

\begin{table}

\caption{Size effect (q=30%)}

Data size	Percentage profit loss				Average service level				Fill rate			
	DGP	disjoint	quantile	proposed	DGP	disjoint	quantile	proposed	DGP	disjoint	quantile	proposed
40	2.7%	3.0%	2.9%	2.8%	0.15	0.18	0.33	0.34	92.6%	92.1%	94.8%	95.1%
120	2.5%	2.7%	2.6%	2.6%	0.24	0.25	0.30	0.31	94.4%	94.0%	95.2%	95.3%
480	2.5%	2.7%	2.5%	2.5%	0.29	0.29	0.31	0.31	95.1%	94.7%	95.2%	95.3%
1200	2.4%	2.5%	2.5%	2.5%	0.29	0.29	0.30	0.30	95.3%	95.2%	95.3%	95.3%
4800	2.5%	2.5%	2.5%	2.5%	0.30	0.30	0.30	0.30	95.3%	95.3%	95.3%	95.3%

\end{table}

Table 5: Target service level effect (n=4800)

Target service level	Percentage profit loss				Average service level			
	DGP	disjoint	quantile	proposed	DGP	disjoint	quantile	proposed
0.5	2.36%	2.37%	2.39%	2.39%	0.506	0.505	0.507	0.508
0.63	6.69%	6.70%	6.77%	6.76%	0.639	0.636	0.639	0.639
0.3	2.48%	2.48%	2.51%	2.52%	0.300	0.300	0.302	0.301