Some observations: the approximation is better when the capacity is slightly larger than the demands.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

aatest3:

eta=0.1:0.1:0.5;

tau=0.5:0.1:0.9;

cvk=0.1:0.2:0.5;

cvd=0.1:0.2:0.5;

c(i)=1+eta(N-i)

s(i,j)=0.5(c(i)-c(j))

h=-0.5c, p=(h\*tau+c)/(1-tau)

capacity\in [80, 120]

demand\in [80, 120]

truncation pieces: 10, 10

result1: N=3;

0.327798 (running time of LDR)

848.424909 (running time of true opt)

0.025725 (gap)

result2: N=5

0.424224

2107.359103

0.029655

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Aatest4 (N=3)

h=-0.7c,

truncation pieces: 40 40

result3:

0.474622

801.718476

0.016198

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Aatest 5(N=3)

H=-0.5c

capacity\in[50 150]

demand\in[50 150]

result 5

result4

0.337250

793.480836

0.031481