runif_non

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```r
knitr::opts_chunk$set(echo = TRUE)
rm(list=ls())
library('forecast')
```

```
## Warning: package 'forecast' was built under R version 3.5.2
```

```r
library('smooth')
```

```
## Warning: package 'smooth' was built under R version 3.5.2
```

```
## Loading required package: greybox
```

```
## Warning: package 'greybox' was built under R version 3.5.2
```

```
## Package "greybox", v0.5.8 loaded.
```

```
## This is package "smooth", v2.5.5
```

```r
library('beanplot')
library('pastecs')
library('scales')
library('ggplot2')

load('runif_non.Rdata')


iter<-20000
```

ppl vs length

```r
x_axis<-c(40,120,480,1200,4800)
y_40<-c(mean(sapply(re_40[[1]], "[[", 1)),mean(sapply(re_40[[2]], "[[", 1)),
        mean(sapply(re_40[[3]], "[[", 1)))
y_120<-c(mean(sapply(re_120[[1]], "[[", 1)),mean(sapply(re_120[[2]], "[[", 1)),
        mean(sapply(re_120[[3]], "[[", 1)))
y_480<-c(mean(sapply(re_480[[1]], "[[", 1)),mean(sapply(re_480[[2]], "[[", 1)),
        mean(sapply(re_480[[3]], "[[", 1)))
y_1200<-c(mean(sapply(re_1200[[1]], "[[", 1)),mean(sapply(re_1200[[2]], "[[", 1)),
        mean(sapply(re_1200[[3]], "[[", 1)))
y_4800<-c(mean(sapply(re_4800[[1]], "[[", 1)),mean(sapply(re_4800[[2]], "[[", 1)),
        mean(sapply(re_4800[[3]], "[[", 1)))
y_axis<-c(y_40,y_120,y_480,y_1200,y_4800)
mac<-matrix(y_axis,nrow = 3,ncol = 5)
mac<-t(mac)
rownames(mac)<-c('40','120','480','1200','4800')
```

```r
colnames(mac)<-c("DGP", "DJ","IMEO")
mac
```

```
DGP   DJ   IMEO
40   0.1129055 0.1299996 0.1229783
120   0.1108858 0.1205064 0.1160361
480   0.1115579 0.1169199 0.1145362
1200   0.1129949 0.1170986 0.1158935
4800   0.1064048 0.1077574 0.1089965
```

```r
v_40<-c(sd(sapply(re_40[[1]], "[[", 1)),sd(sapply(re_40[[2]], "[[", 1)),
        sd(sapply(re_40[[3]], "[[", 1)))
v_120<-c(sd(sapply(re_120[[1]], "[[", 1)),sd(sapply(re_120[[2]], "[[", 1)),
        sd(sapply(re_120[[3]], "[[", 1)))
v_480<-c(sd(sapply(re_480[[1]], "[[", 1)),sd(sapply(re_480[[2]], "[[", 1)),
        sd(sapply(re_480[[3]], "[[", 1)))
v_1200<-c(sd(sapply(re_1200[[1]], "[[", 1)),sd(sapply(re_1200[[2]], "[[", 1)),
        sd(sapply(re_1200[[3]], "[[", 1)))
v_4800<-c(sd(sapply(re_4800[[1]], "[[", 1)),sd(sapply(re_4800[[2]], "[[", 1)),
        sd(sapply(re_4800[[3]], "[[", 1)))
v_axis<-c(v_40,v_120,v_480,v_1200,v_4800)
var<-matrix(v_axis,nrow = 3,ncol = 5)
var<-t(var)
rownames(var)<-c('40','120','480','1200','4800')
colnames(var)<-c("DGP", "DJ","IMEO")
var
```

```
##               DGP        DJ      IMEO
## 40     0.1886033 0.1903511 0.1925879
## 120    0.1745933 0.1776685 0.1769352
## 480    0.1658734 0.1671723 0.1672624
## 1200   0.1814214 0.1833806 0.1819461
## 4800   0.6988574 0.7024968 0.7118382
```

```r
par(mar=c(par('mar')[1:3], 0))
plot.new()
l <- legend(0, 0, bty='n',c("DGP", "DJ","IMEO"),plot=FALSE, pch=1:3,col=1:3)
w <- grconvertX(l$rect$w, to='ndc') - grconvertX(0, to='ndc')
par(omd=c(0, 1-w, 0, 1))
matplot(mac, type = c("b"),pch=c(1,2,4),col = c(1,2,4),xaxt = "n",yaxt = "n"
        ,xlab = 'data length',ylab = 'percetage profit loss')
axis(1, at=1:5, labels=x_axis)
axis(2, at=pretty(y_axis), lab=paste0(pretty(y_axis) * 100, "%"), las=TRUE)
legend(par('usr')[2], par('usr')[4], bty='n', xpd=NA
        ,c("DGP", "DJ","IMEO"), pch=c(1,2,4),col=c(1,2,4))
```
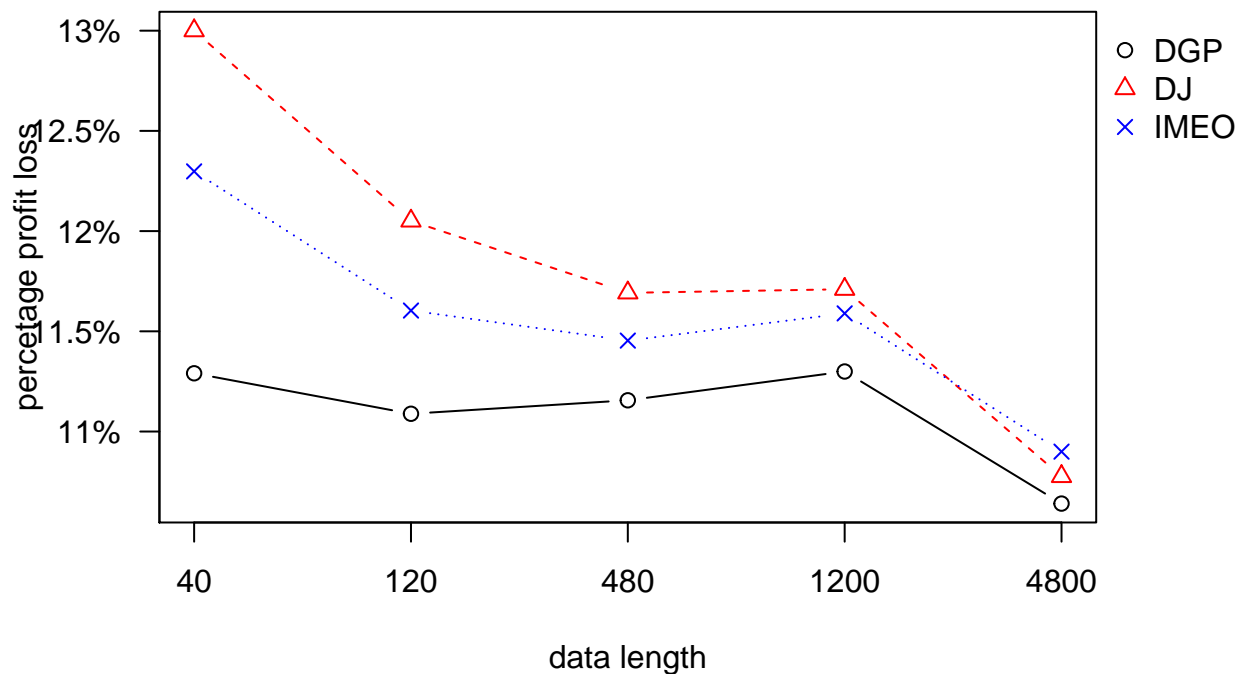
sl vs length

```r
x_axis<-c(40,120,480,1200,4800)
y_40<-c(mean(sapply(re_40[[1]], "[[", 2)),mean(sapply(re_40[[2]], "[[", 2)),
        mean(sapply(re_40[[3]], "[[", 2)))
y_120<-c(mean(sapply(re_120[[1]], "[[", 2)),mean(sapply(re_120[[2]], "[[", 2)),
        mean(sapply(re_120[[3]], "[[", 2)))
y_480<-c(mean(sapply(re_480[[1]], "[[", 2)),mean(sapply(re_480[[2]], "[[", 2)),
        mean(sapply(re_480[[3]], "[[", 2)))
y_1200<-c(mean(sapply(re_1200[[1]], "[[", 2)),mean(sapply(re_1200[[2]], "[[", 2)),
        mean(sapply(re_1200[[3]], "[[", 2)))
y_4800<-c(mean(sapply(re_4800[[1]], "[[", 2)),mean(sapply(re_4800[[2]], "[[", 2)),
        mean(sapply(re_4800[[3]], "[[", 2)))
y_axis<-c(y_40,y_120,y_480,y_1200,y_4800)
mac<-matrix(y_axis,nrow = 3,ncol = 5)
mac<-t(mac)
rownames(mac)<-c('40','120','480','1200','4800')
colnames(mac)<-c("DGP", "DJ","IMEO")
mac
```

```
##          DGP      DJ    IMEO
## 40    0.56250 0.50810 0.56680
## 120   0.56065 0.54860 0.56640
## 480   0.55980 0.57880 0.56670
## 1200  0.55950 0.58765 0.56795
## 4800  0.55850 0.59285 0.56765
```

```r
v_40<-c(sd(sapply(re_40[[1]], "[[", 2)),sd(sapply(re_40[[2]], "[[", 2)),
        sd(sapply(re_40[[3]], "[[", 2)))
v_120<-c(sd(sapply(re_120[[1]], "[[", 2)),sd(sapply(re_120[[2]], "[[", 2)),
        sd(sapply(re_120[[3]], "[[", 2)))
v_480<-c(sd(sapply(re_480[[1]], "[[", 2)),sd(sapply(re_480[[2]], "[[", 2)),
```

```
        sd(sapply(re_480[[3]], "[[", 2)))
v_1200<-c(sd(sapply(re_1200[[1]], "[[", 2)),sd(sapply(re_1200[[2]], "[[", 2)),
        sd(sapply(re_1200[[3]], "[[", 2)))
v_4800<-c(sd(sapply(re_4800[[1]], "[[", 2)),sd(sapply(re_4800[[2]], "[[", 2)),
        sd(sapply(re_4800[[3]], "[[", 2)))
v_axis<-c(v_40,v_120,v_480,v_1200,v_4800)
var<-matrix(v_axis,nrow = 3,ncol = 5)
var<-t(var)
rownames(var)<-c('40','120','480','1200','4800')
colnames(var)<-c("DGP", "DJ","IMEO")
var
```

```
##           DGP        DJ      IMEO
## 40   0.4960908 0.4999469 0.4955301
## 120  0.4963204 0.4976449 0.4955838
## 480  0.4964235 0.4937639 0.4955435
## 1200 0.4964595 0.4922698 0.4953737
## 4800 0.4965784 0.4913155 0.4954147
```

```
par(mar=c(par('mar')[1:3], 0))
plot.new()
l <- legend(0, 0, bty='n',c("DGP", "DJ","IMEO"),plot=FALSE, pch=1:3,col=1:3)
w <- grconvertX(l$rect$w, to='ndc') - grconvertX(0, to='ndc')
par(omd=c(0, 1-w, 0, 1))
matplot(mac, type = c("b"),pch=c(1,2,4),col = c(1,2,4),xaxt = "n"
        ,xlab = 'data length',ylab = 'service level')
abline(h=0.56,lty=2,col='black')
axis(1, at=1:5, labels=x_axis)
legend(par('usr')[2], par('usr')[4], bty='n', xpd=NA
        ,c("DGP", "DJ","IMEO"), pch=c(1,2,4),col=c(1,2,4))
```