slr_evir

January 16, 2018

In [656]:
```
one <- c(1,1)
xval <- c(1,2)
yval <- c(2,5)
X <- matrix(c(one,xval),nrow=2,ncol=2)
Y <- matrix(c(yval),nrow=2,ncol=1)
```

In [657]:
```
solve(t(X) %*% X) %*% t(X) %*% Y
```

```
-1
3
```

In [658]:
```
one <- c(1,1,1)
x1val <- c(1,4,3)
x2val <- c(2,-1,1)
yval <- c(9,3,9)

X <- matrix(c(one,x1val,x2val),nrow=3,ncol=3)
Y <- matrix(c(yval),nrow=3,ncol=1)
```

In [659]:
```
solve(t(X) %*% X) %*% t(X) %*% Y
```

```
-1
2
4
```

In [660]:
```
one <- c(1,1,1)

xval <- c(1,2,3)

yval <- c(2,5,4)

X <- matrix(c(one,xval),nrow=3,ncol=2)

Y <- matrix(c(yval),nrow=3,ncol=1)
```

In [661]:
```
solve(t(X) %*% X) %*% t(X) %*% Y
```

```
1.666667
1.000000
```

In [662]:
```
one <- c(1,1,1)

xval <- c(1,2,3)

yval <- c(2,5,4)

X <- matrix(c(one,xval),nrow=3,ncol=2)

Y <- matrix(c(yval),nrow=3,ncol=1)
```

In [663]:
```
betahat = solve(t(X) %*% X) %*% t(X) %*% Y
betahat
```

1.666667
1.000000

In [664]:
```
SSE = t(Y) %*% Y - t(betahat) %*% t(X) %*% Y
SSE
```

2.666667

In [665]:
```
x <- c(3,5,7,9)
y <- c(17,23,41,50)

t_line = lm(y ~ x)
t_line
```

```
Call:
lm(formula = y ~ x)

Coefficients:
(Intercept)            x
      -2.35         5.85
```

In [666]:
```
coeffs = coefficients(t_line)
b0 = coeffs[1]
b1 = coeffs[2]
yhat = b1 * x + b0
sum((y-yhat)^2)
```

24.3

In [667]:
```
tsum = sum((y-mean(y))^2)
tsum
```

708.75

```
In [668]: n = length(x)
          df = n - 2
          se = sqrt(sum((y-yhat)^2)/df)
          se
```

3.48568501158668

```
In [669]: tsum = sum((x-mean(x))^2)
          tsum
```

20

```
In [670]: clevel=.95
          atl = clevel + (1 - clevel)/2
          t = qt(atl,df)
          t
```

4.30265272974946

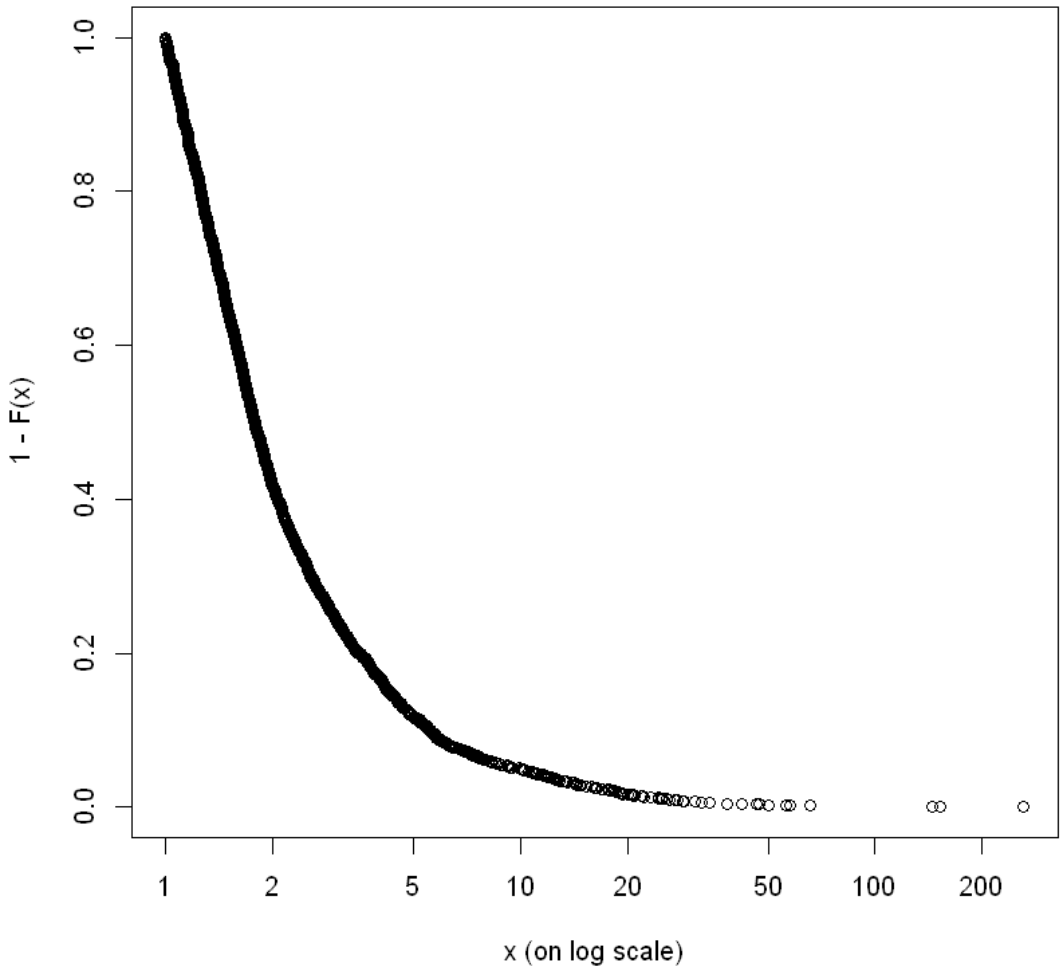
```
In [671]: lb = b1 - t * se/sqrt(tsum)
          ub = b1 + t * se/sqrt(tsum)
          lb
          ub
```

x: 2.49641408913705
x: 9.20358591086295

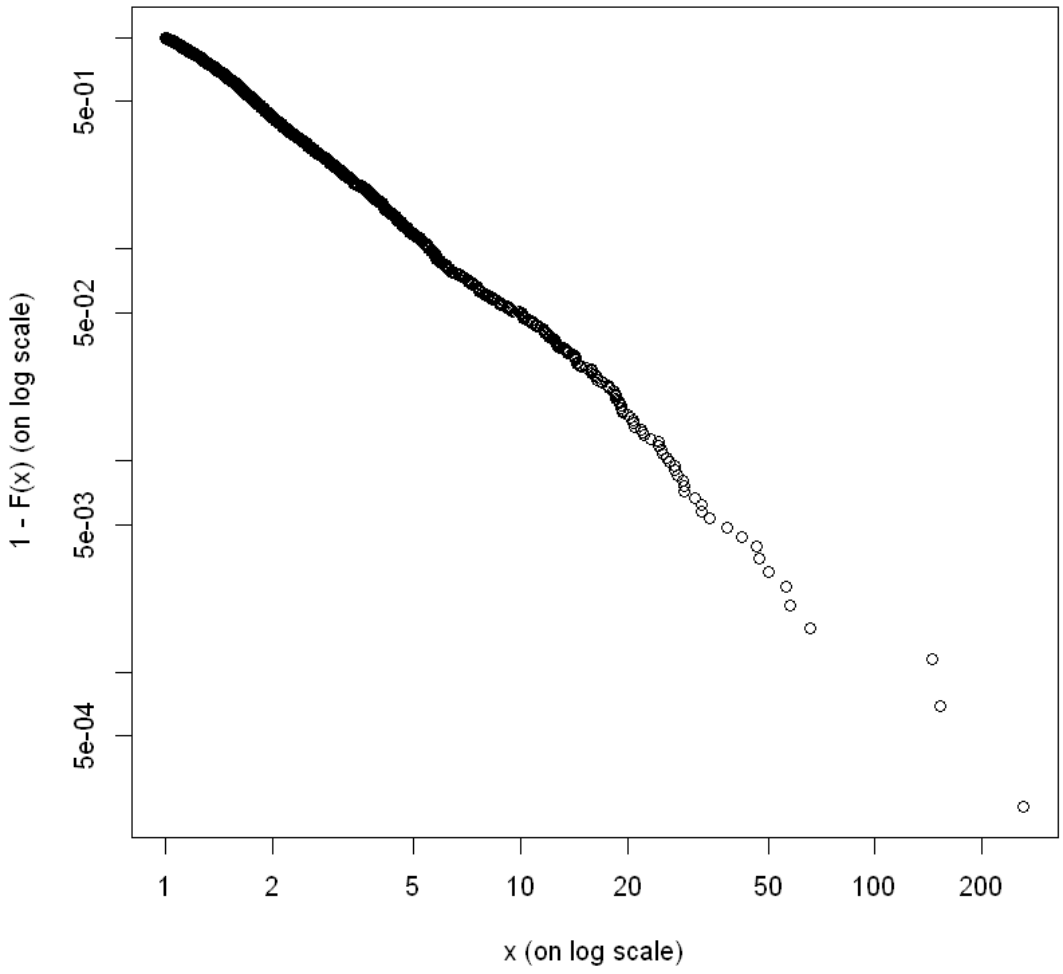
```
In [672]: library(evir)
          data(danish)
          length(danish)
```

2167

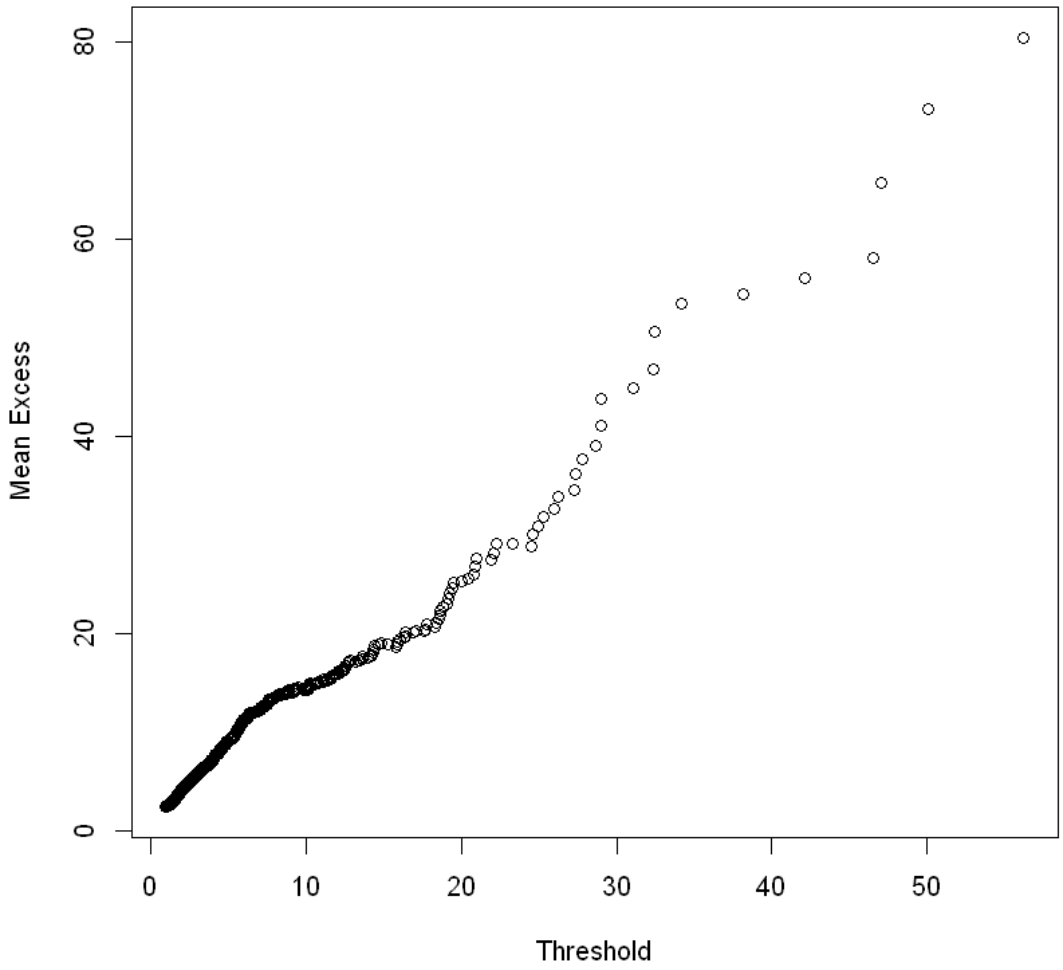
```
In [673]: emplot(danish)
```



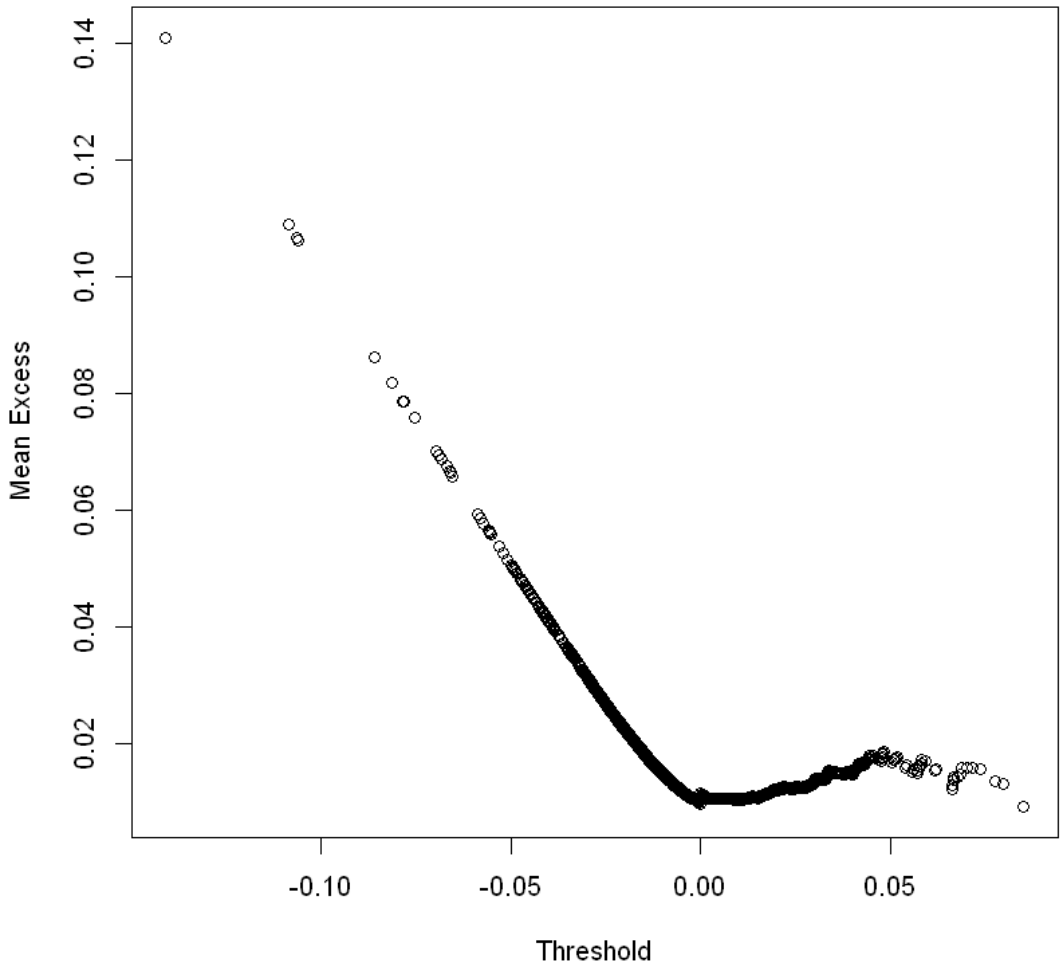

```
In [674]: emplot(danish, alog="xy")
```



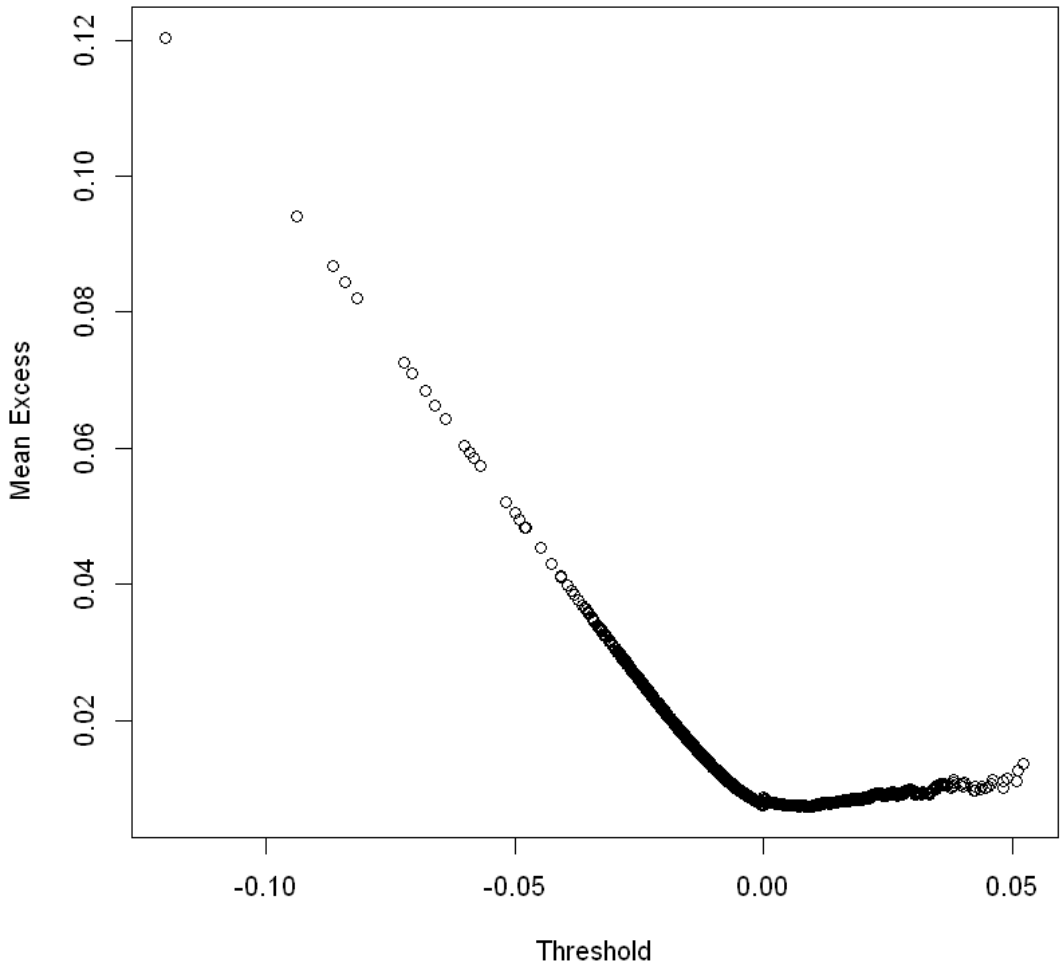

```
In [675]: meplot(danish, omit=5)
```




```
In [676]: meplot(bmw, omit=5)
```

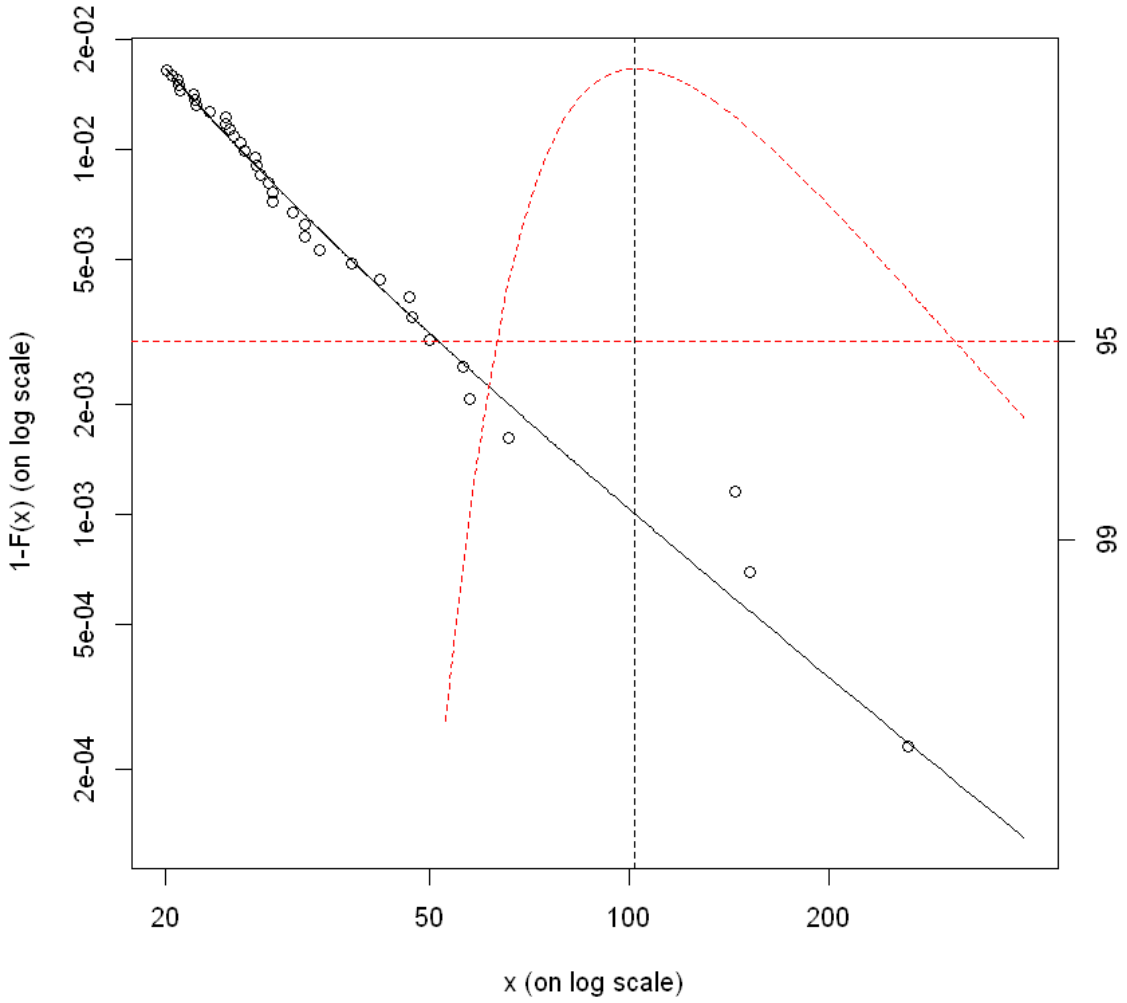



```
In [677]: meplot(siemens, omit=5)
```



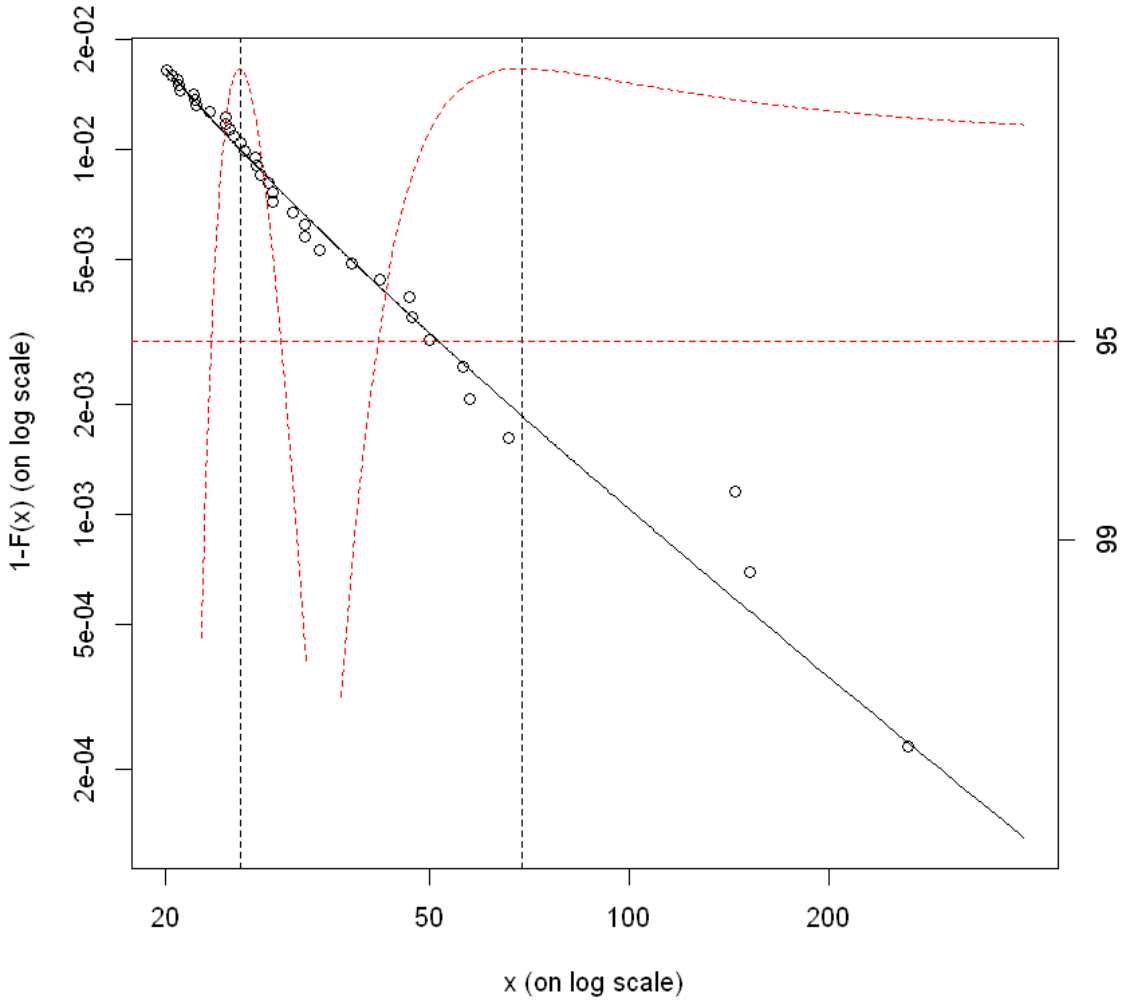

```
In [678]: tp <- tailplot(gpdfittedparameters)
          gpd.q(tp, pp = 0.999, ci.p = 0.95)
```

Lower CI 63.2784325644593 **Estimate** 102.182255843829 **Upper CI** 310.687680096456




```
In [679]: tp <- tailplot(gpdfittedparameters)
          gpd.q(tp, pp = 0.99)
          gpd.sfall(tp, 0.99)
```

Lower CI 23.4401636965386 **Estimate** 25.8451037628292 **Upper CI** 29.7958674409946
Lower CI 42.1610622858709 **Estimate** 68.9846266348609 **Upper CI** 394.875549048316


1-F(x) (on log scale)
2e-02
1e-02
5e-03
2e-03
1e-03
5e-04
2e-04
95
99
20
50
100
200
x (on log scale)