Assignment 2

FINA 5250 Empirical Methods in Finance

LIU, Weiyang

wliuax@connect.ust.hk

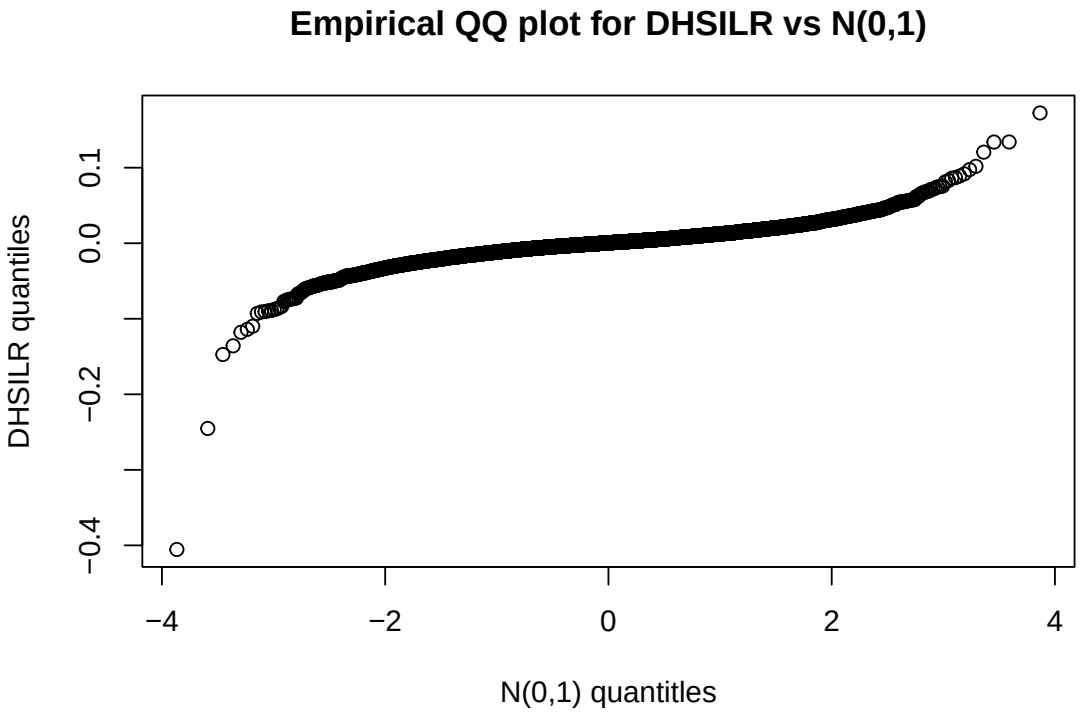
Question 1

1.1

Compute VaR and expected shortfall under normal assumption for q = 0.01 and 0.001.

```
## VaR(q=0.01) = 0.0379280773377616
## ES(q=0.01) = 0.0434468581378894
## VaR(q=0.001) = 0.0504536060267089
## ES(q=0.001) = 0.0546531880677942
```

1.2



The distribution of log returns has a heavier tail than normal distribution.

1.3

Compute empirical VaR and empirical expected shortfall for q = 0.01 and 0.001.

```
## VaR(q=0.01) = 0.0432004501839053
## ES(q=0.01) = 0.0674977851182838
## VaR(q=0.001) = 0.0904547477271284
## ES(q=0.001) = 0.155001873334411
```

1.4

The normal model **underestimates** the risk.

Question 2

Plot 1

The tails of Y are **heavier** than the tails of the Gaussian distribution.

Plot 2

The upper tail of Z is **Gaussian**.

The lower tail of Z is **heavier than Gaussian**.