Financial Risk Forecasting
Seminar 4

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4 Making reports

4.1 Links from the R notebook

[Presentations and reports from the R notebook](#).

4.2 Word and PowerPoint vs. Quarto

Most people use Microsoft Word or PowerPoint to do reports. They create the document in that software and then copy the output from R into the document.

The company that provides us with RStudio has a product called Quarto.

We can automatically use it to make Word, PowerPoint, html and PDF files with RStudio.

4.3 Example Quarto project

We have created an example project that runs a small set of analysis. It is kept on [github.com/Jon-Danielsson/Financial-Risk-Forecasting-Example-Project](#).

4.4 To start

Make a Quarto file and save it. In RStudio, File -> New file -> Quarto Document or Quarto Presentation. Save file to same place your data is in.

```
---
title: "Seminar 4. Documents"
format: html
editor: visual
---
```

```
format: pdf
```

```
format: docx
```

```
format: beamer
```

```
format: pptx
```

```
format: revealjs
```

4.5 Running Code

When you click the **Render** button a document will be generated that includes both content and the output of embedded code. You can embed code like this:

````
```{r}
#| echo: false

suppressPackageStartupMessages(library(tseries))
suppressPackageStartupMessages(library(car))
suppressPackageStartupMessages(library(lubridate))
suppressPackageStartupMessages(library(zoo))
library(moments)
library(knitr)
load('Returns.RData')
load('Prices.RData')
```


```{r}
#| echo: false
a=34
b=0.4
c=a^b
print(c)
```


If we start with `r a` ` and raise it to the power of `r b`, we
get `r c`.

```{r}
names(Returns)
```


```{r}
#| echo: false

n=names(Returns)
n=n[2:length(n)]
cat("The firms we have are:")
for(i in n) cat(i,", ")
cat("\n")
```


```{r}
````

```
#| echo: false

use="AAPL"
```


If we take `r use`, we have `r length(Returns[[use]])`
 observations. The mean return is
`r mean(Returns[[use]])*100`%, and
on the best day the return was
`r round(max(Returns[[use]])*100,1)`%.
That happened on
`r Returns$date[Returns[[use]]==max(Returns[[use]])]`.
Can format that as date,
`r ymd(Returns$date[Returns[[use]]==max(Returns[[use]])])`

The worst day in `r use`'s history happened on
`r ymd(Returns$date[Returns[[use]]==min(Returns[[use]])])`
when it fell by `r round(min(Returns[[use]])*100,1)`%.

PLotting Apple

```{r}
plot(Prices$AAPL)
```

PLotting Apple with dates

```{r}
plot(ymd(Prices$date),Prices$AAPL,type='l',log='y')
```

Making summary stats for all assets

```{r}
#| echo: false

n=names(Returns)
n=n[2:length(n)]
for(i in n){
  x=Returns[[i]]
  cat(i,mean(x),sd(x),min(x),max(x),"\n")
}
```

Making summary stats for all assets with df
```

```r
#| echo: false

df=matrix(ncol=4,nrow=length(n))
n=names(Returns)
n=n[2:length(n)]

for(i in 1:length(n)){

  x=Returns[[n[i]]]
 df[i,]=c(mean(x),sd(x),min(x),max(x))
}

df=as.data.frame(df)
df=cbind(n,df*100)
names(df)=c("Asset","mean","sd","min","max")

kable(df,digits=3,caption="Sample stats (in %)")

```

Testing

```r
y=Returns$GE
mean(y)
sd(y)
skewness(y)
kurtosis(y)
jarque.bera.test(y)
Box.test(y, type = "Ljung-Box")
Box.test(y^2, type = "Ljung-Box")
```

ACF

```r
acf(y, main = "Autocorrelation of returns")
```

```r
acf(y^2, main = "Autocorrelation of returns squared")
```

```r
#| echo: false

x=qqPlot(y, distribution = "norm", envelope = FALSE,xlab="normal",main="QQ plot")
x=qqPlot(y, distribution = "t", df = 4, envelope = FALSE,xlab="t(4)")
```

```
x=qqPlot(y, distribution = "t", df = 3.5, envelope = FALSE,xlab="t(3.5)")
x=qqPlot(y, distribution = "t", df = 3, envelope = FALSE,xlab="t(3)")
```
```

## 4.6   Optional exercises

1. Make a one-page html document describing the statistical properties of a stock
2. For the same document, make a PDF and a Word file
3. Make a presentation on the statistical properties of a stock, in html, PowerPoint and pdf formats