STA380\_Exercise1

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# Question 1

# Question 2

You can also embed plots, for example:

# Question 3

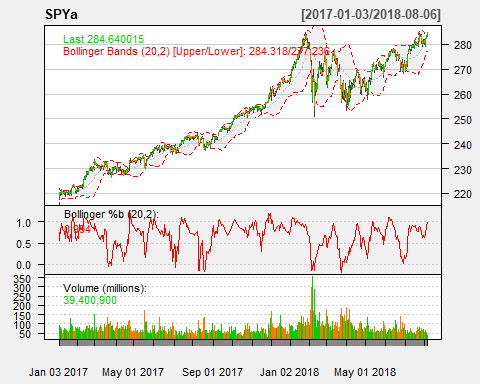
## Bootstrapping

library(mosaic)  
library(quantmod)  
library(foreach)  
  
mystocks = c("SPY", "TLT", "LQD", "EEM", "VNQ")  
myprices = getSymbols(mystocks)  
  
for(ticker in mystocks) {  
 expr = paste0(ticker, "a = adjustOHLC(", ticker, ")")  
 eval(parse(text=expr))  
 }  
  
  
# Combine all the returns in a matrix  
all\_returns = cbind(ClCl(SPYa),  
 ClCl(TLTa),  
 ClCl(LQDa),  
 ClCl(EEMa),  
 ClCl(VNQa))  
head(all\_returns)

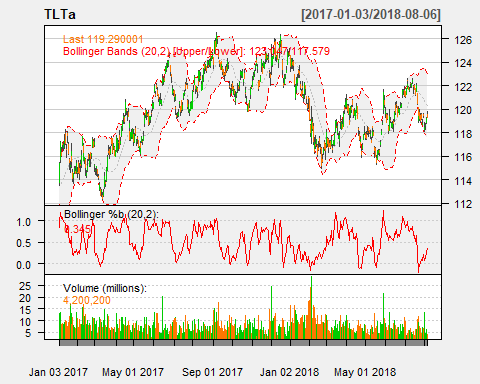
## ClCl.SPYa ClCl.TLTa ClCl.LQDa ClCl.EEMa  
## 2007-01-03 NA NA NA NA  
## 2007-01-04 0.0021221123 0.006063328 0.0075152938 -0.013809353  
## 2007-01-05 -0.0079763183 -0.004352668 -0.0006526807 -0.029238205  
## 2007-01-08 0.0046250821 0.001793566 -0.0002798843 0.007257535  
## 2007-01-09 -0.0008498831 0.000000000 0.0001866169 -0.022336235  
## 2007-01-10 0.0033315799 -0.004475797 -0.0013063264 -0.002303160  
## ClCl.VNQa  
## 2007-01-03 NA  
## 2007-01-04 0.001296655  
## 2007-01-05 -0.018518518  
## 2007-01-08 0.001451392  
## 2007-01-09 0.012648208  
## 2007-01-10 0.012880523

As we can see above, all\_returns has the closing returns for the 5 stocks we want to invest in. To determine which out of these are risky and stable, we will plot their returns and check their trend

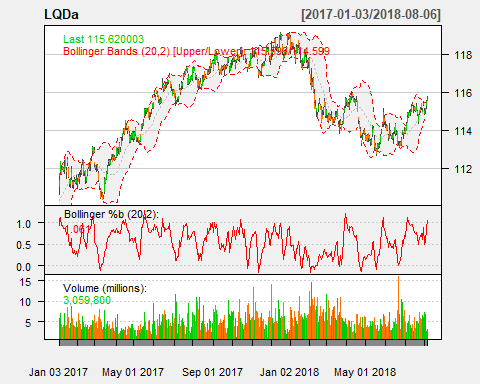
#plotting since 2007 and since 2017 to compare  
  
chartSeries(SPYa,TA='addBBands();  
 addBBands(draw="p");  
 addVo()',   
 subset='2017-01::2018',  
 theme="white"  
 )



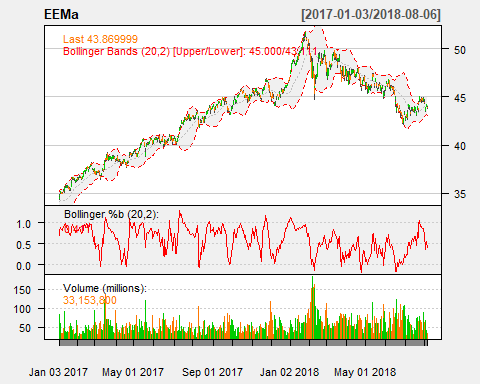
chartSeries(TLTa,TA='addBBands();  
 addBBands(draw="p");  
 addVo()',   
 subset='2017-01::2018',  
 theme="white"  
 )



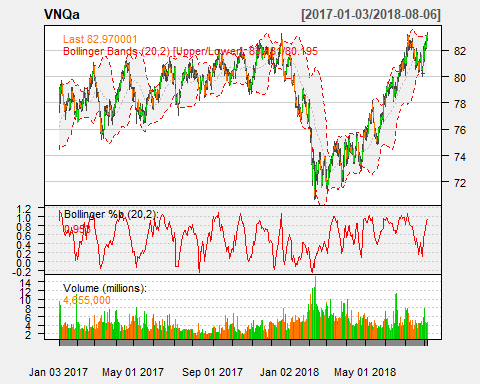
chartSeries(LQDa,TA='addBBands();  
 addBBands(draw="p");  
 addVo()',   
 subset='2017-01::2018',  
 theme="white"  
 )



chartSeries(EEMa,TA='addBBands();  
 addBBands(draw="p");  
 addVo()',   
 subset='2017-01::2018',  
 theme="white"  
 )



chartSeries(VNQa,TA='addBBands();  
 addBBands(draw="p");  
 addVo()',   
 subset='2017-01::2018',  
 theme="white"  
 )



all\_returns = as.matrix(na.omit(all\_returns))  
  
# This simulates a random day  
return.today = resample(all\_returns, 1, orig.ids=FALSE)

## Question 4