

Pre_processing

FE800 GROUP 7

2/4/2018

```
library(quantmod)
```

```
start_date = as.Date('01/01/10', "%m/%d/%y")  
end_date = as.Date('01/31/18', "%m/%d/%y")
```

XLE

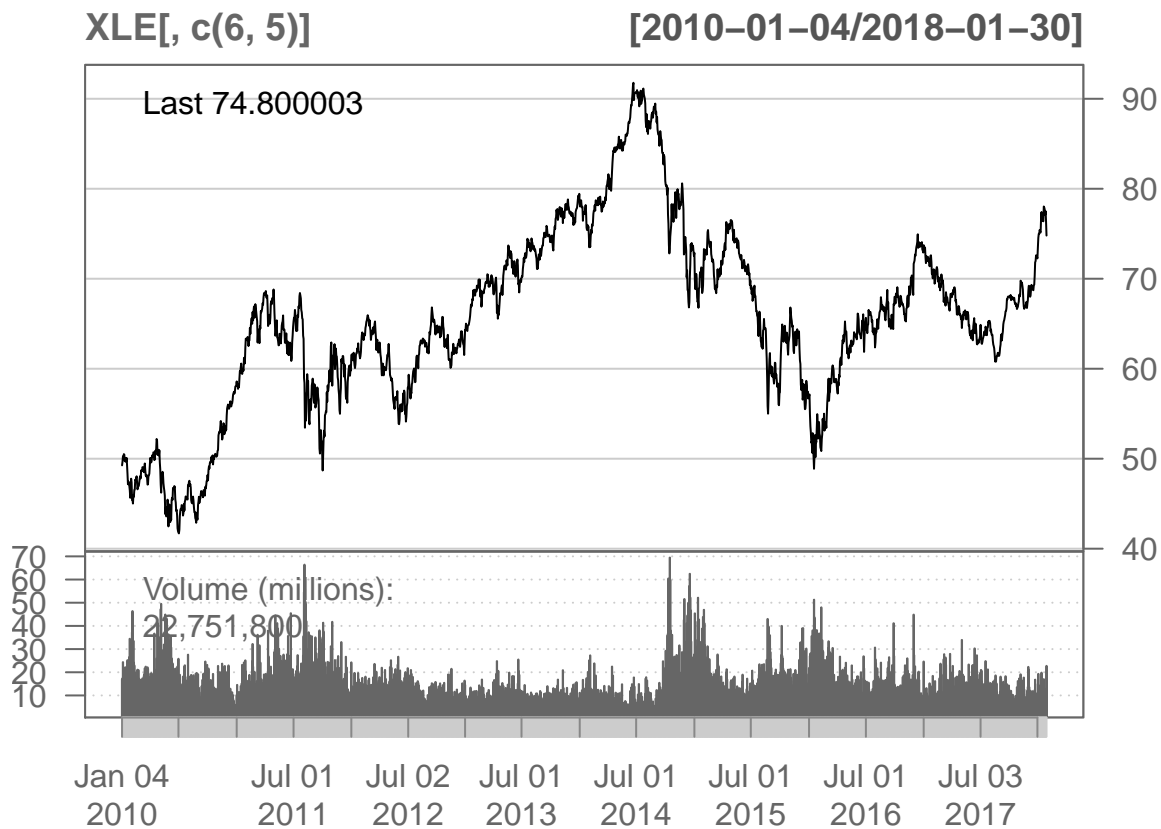
#Data Acquisition

```
getSymbols(Symbols = 'XLE', from = start_date, to = end_date)
```

```
## [1] "XLE"
```

#Visualization

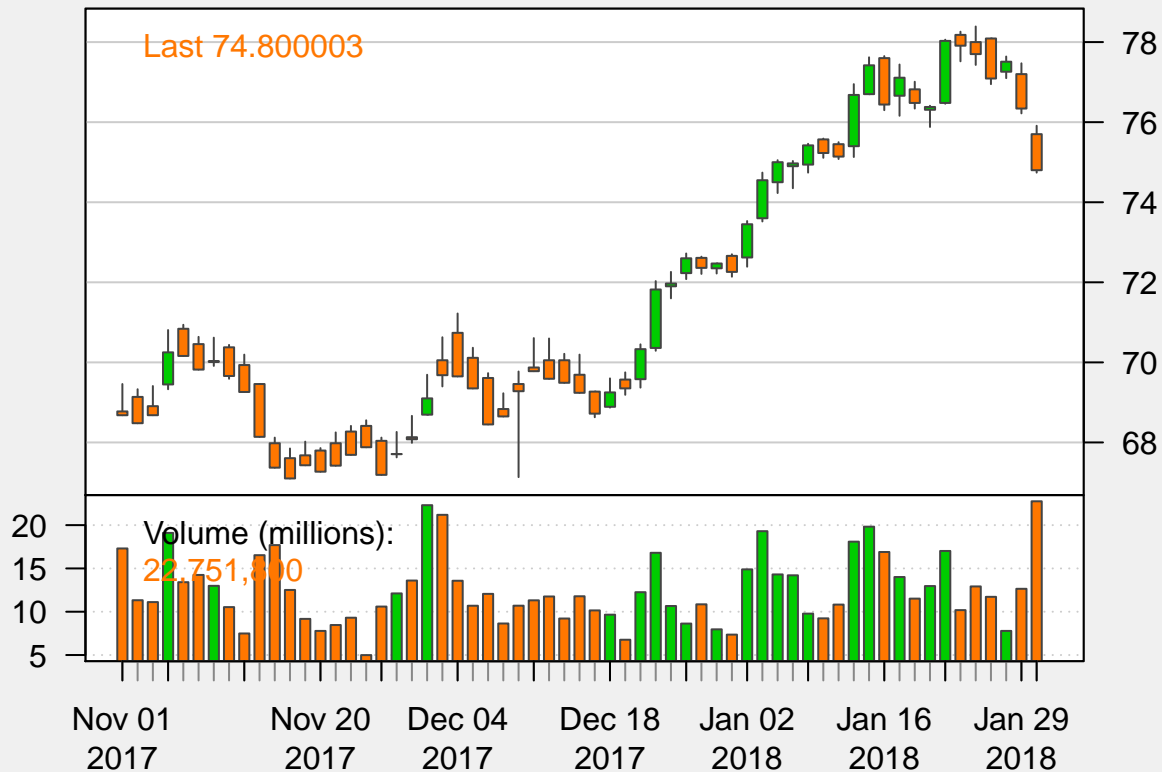
```
barChart(XLE[, c(6,5)], theme='white.mono', bar.type='hlc')
```



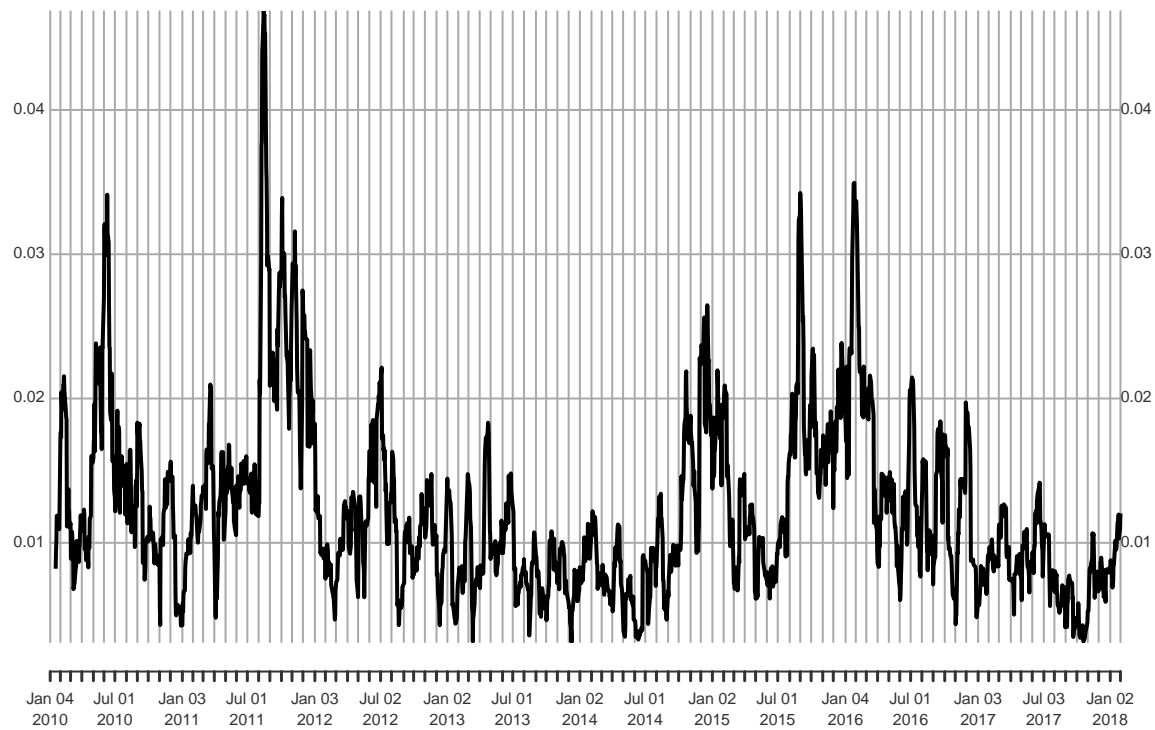
```
chartSeries(XLE, subset='last 3 months', theme = chartTheme('white'))
```

XLE

[2017-11-01/2018-01-30]



```
#Convert price into daily return
XLE_return = Delt(x1 = XLE[, 6,], k = 1, type = 'arithmetic')
#Calculate return volatility w/ 10-day rolling window
XLE_vol_rolling = rollapply(data = XLE_return, 10, sd)
plot(XLE_vol_rolling, main = 'XLE 10-DAY ROLLING VOLATILITY')
```



XLU

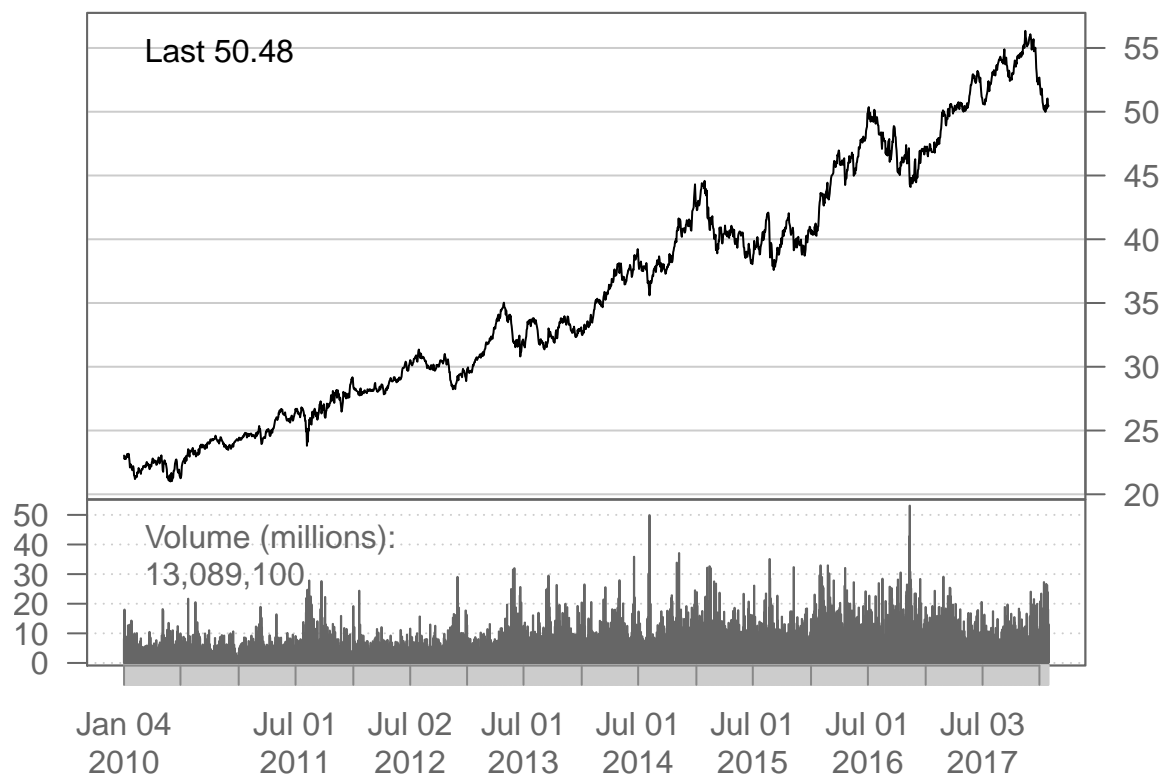
```
#Data Acquisition
getSymbols(Symbols = 'XLU', from = start_date, to = end_date)
```

```
## [1] "XLU"
```

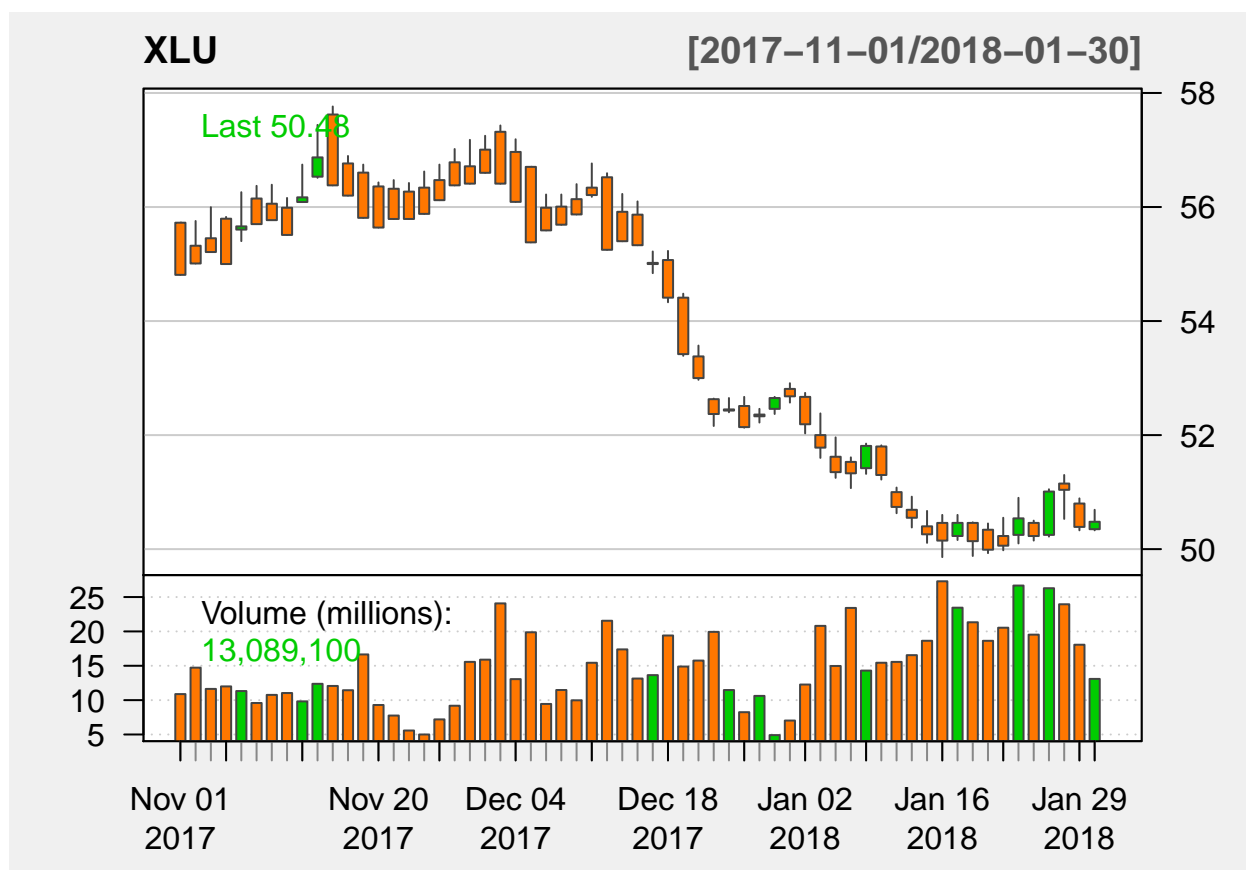
```
#Visualization
barChart(XLU[, c(6,5)], theme='white.mono', bar.type='hlc')
```

XLU[, c(6, 5)]

[2010-01-04/2018-01-30]



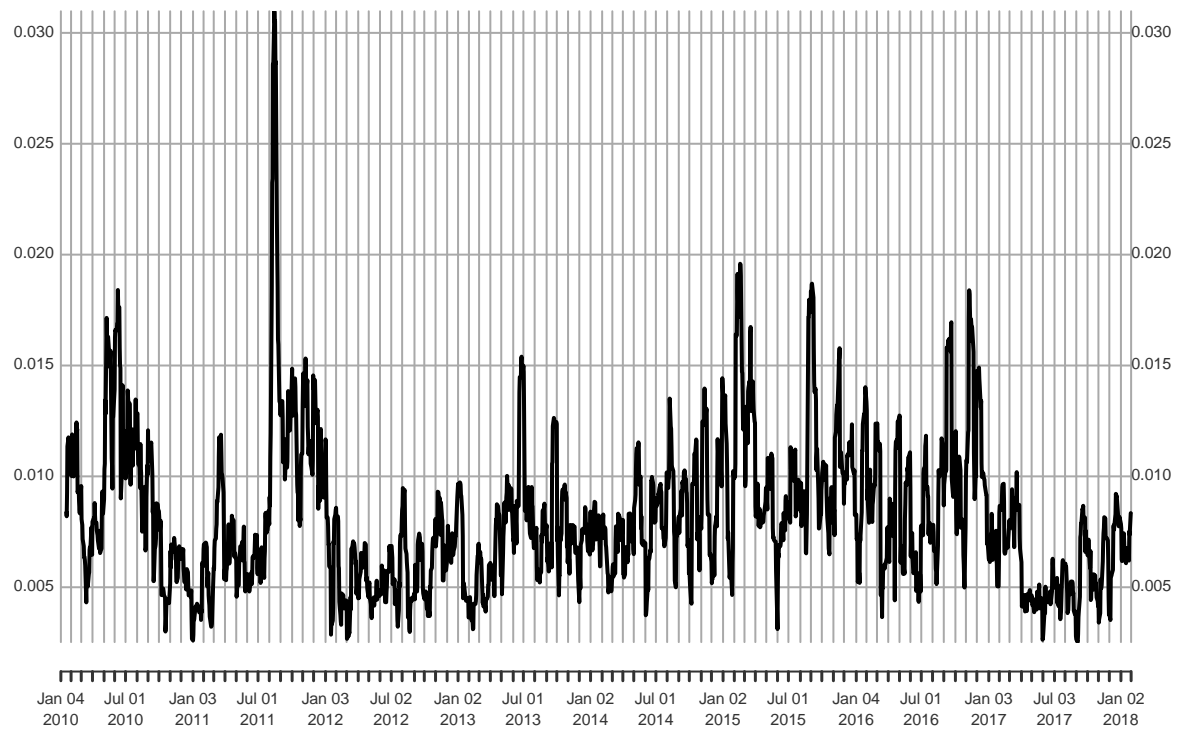
```
chartSeries(XLU, subset='last 3 months', theme = chartTheme('white'))
```



```
#Convert price into daily return
XLU_return = Delt(x1 = XLU[, 6,], k = 1, type = 'arithmetic')
#Calculate return volatility w/ 10-day rolling window
XLU_vol_rolling = rollapply(data = XLU_return, 10, sd)
plot(XLU_vol_rolling, main = 'XLU 10-DAY ROLLING VOLATILITY')
```

XLK 10-DAY ROLLING VOLATILITY

2010-01-04 / 2018-01-30



XLK

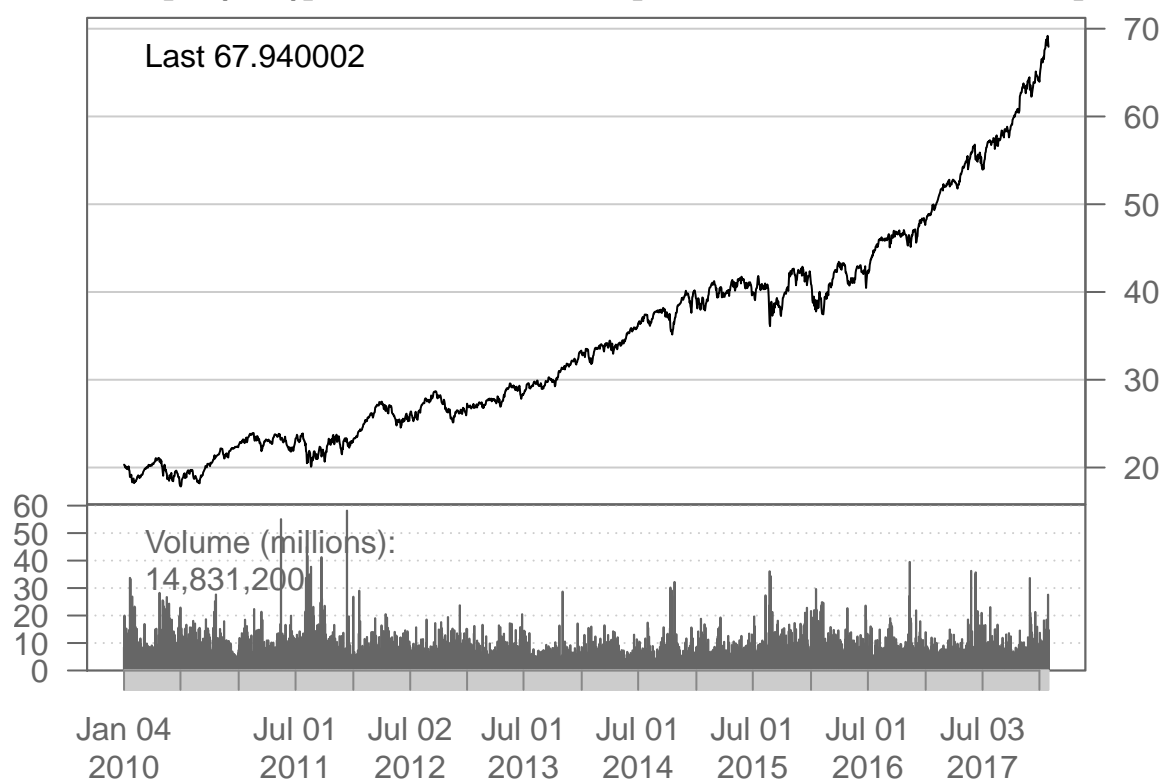
```
#Data Acquisition
getSymbols(Symbols = 'XLK', from = start_date, to = end_date)
```

```
## [1] "XLK"
```

```
#Visualization
barChart(XLK[, c(6,5)], theme='white.mono', bar.type='hlc')
```

XLK[, c(6, 5)]

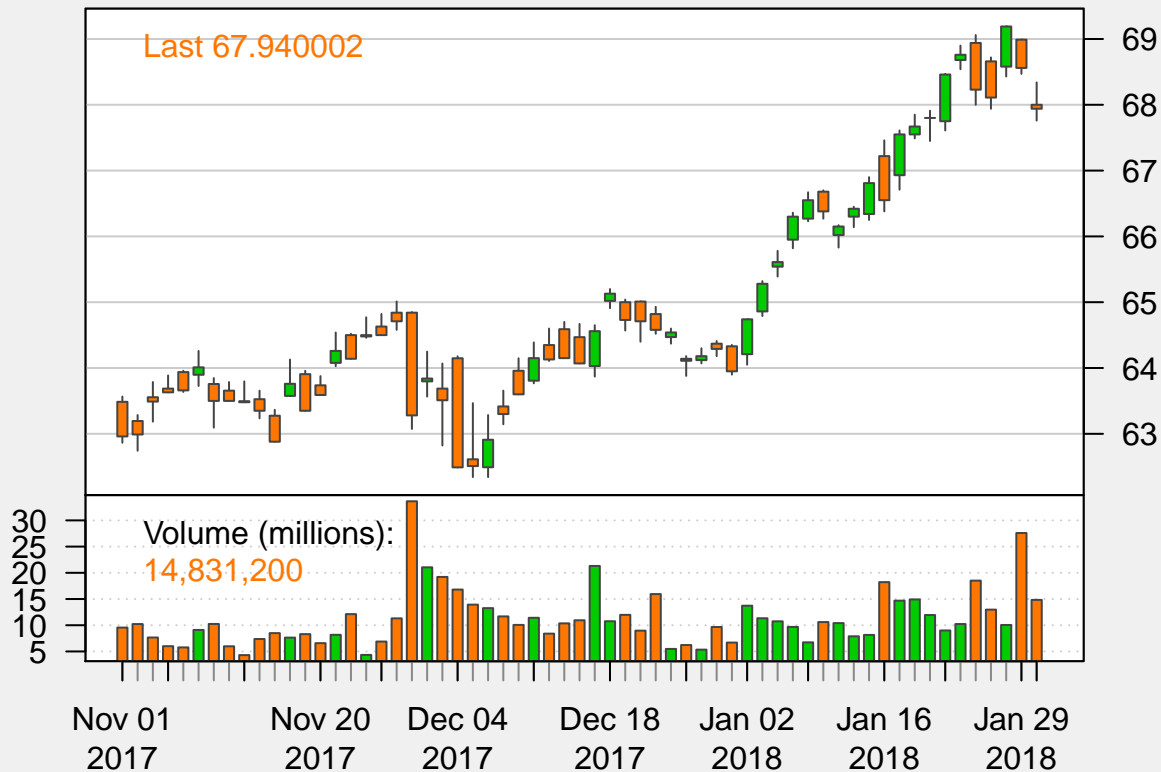
[2010-01-04/2018-01-30]



```
chartSeries(XLK, subset='last 3 months', theme = chartTheme('white'))
```

XLK

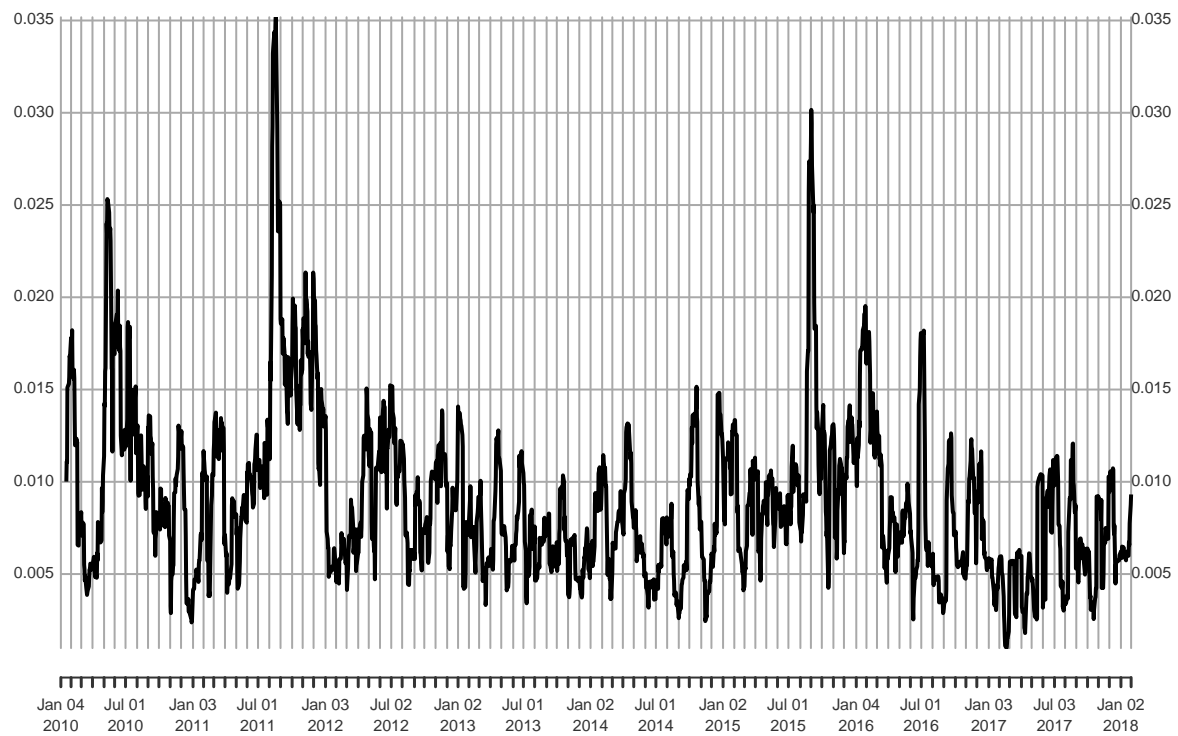
[2017-11-01/2018-01-30]



```
#Convert price into daily return
XLK_return = Delt(x1 = XLK[, 6,], k = 1, type = 'arithmetic')
#Calculate return volatility w/ 10-day rolling window
XLK_vol_rolling = rollapply(data = XLK_return, 10, sd)
plot(XLK_vol_rolling, main = 'XLK 10-DAY ROLLING VOLATILITY')
```


XLK 10-DAY ROLLING VOLATILITY

2010-01-04 / 2018-01-30



XLB

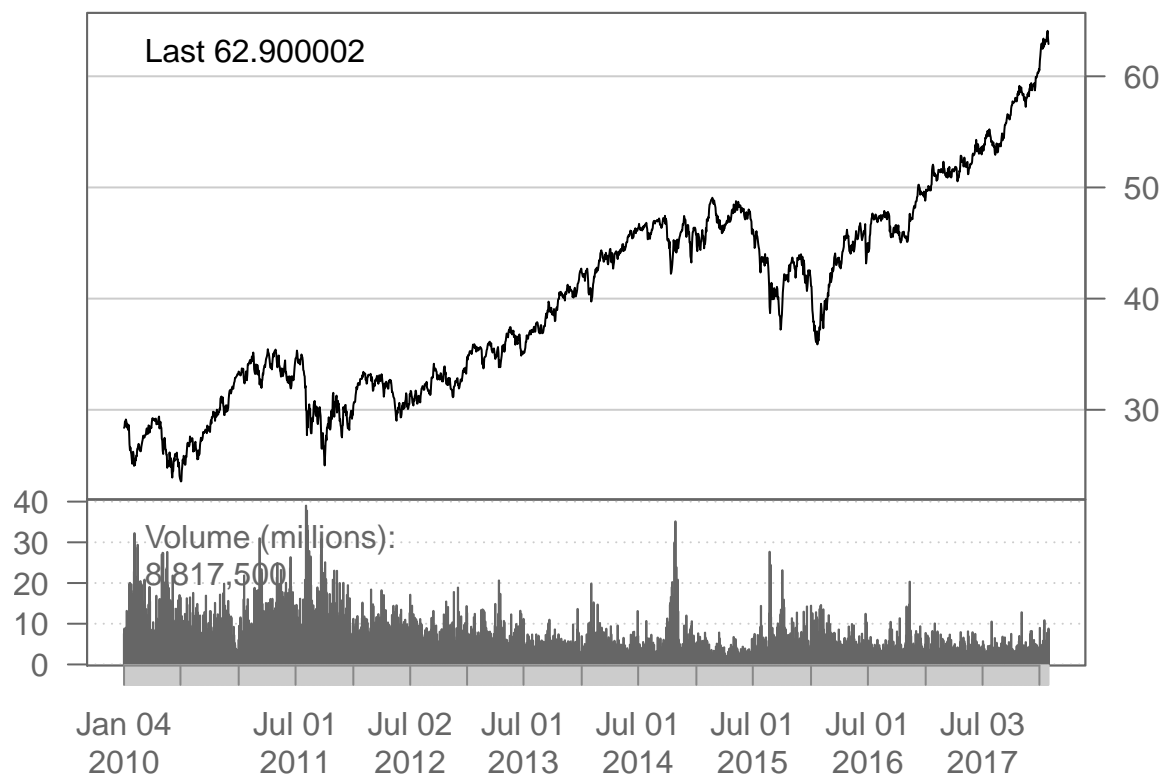
```
#Data Acquisition
getSymbols(Symbols = 'XLB', from = start_date, to = end_date)
```

```
## [1] "XLB"
```

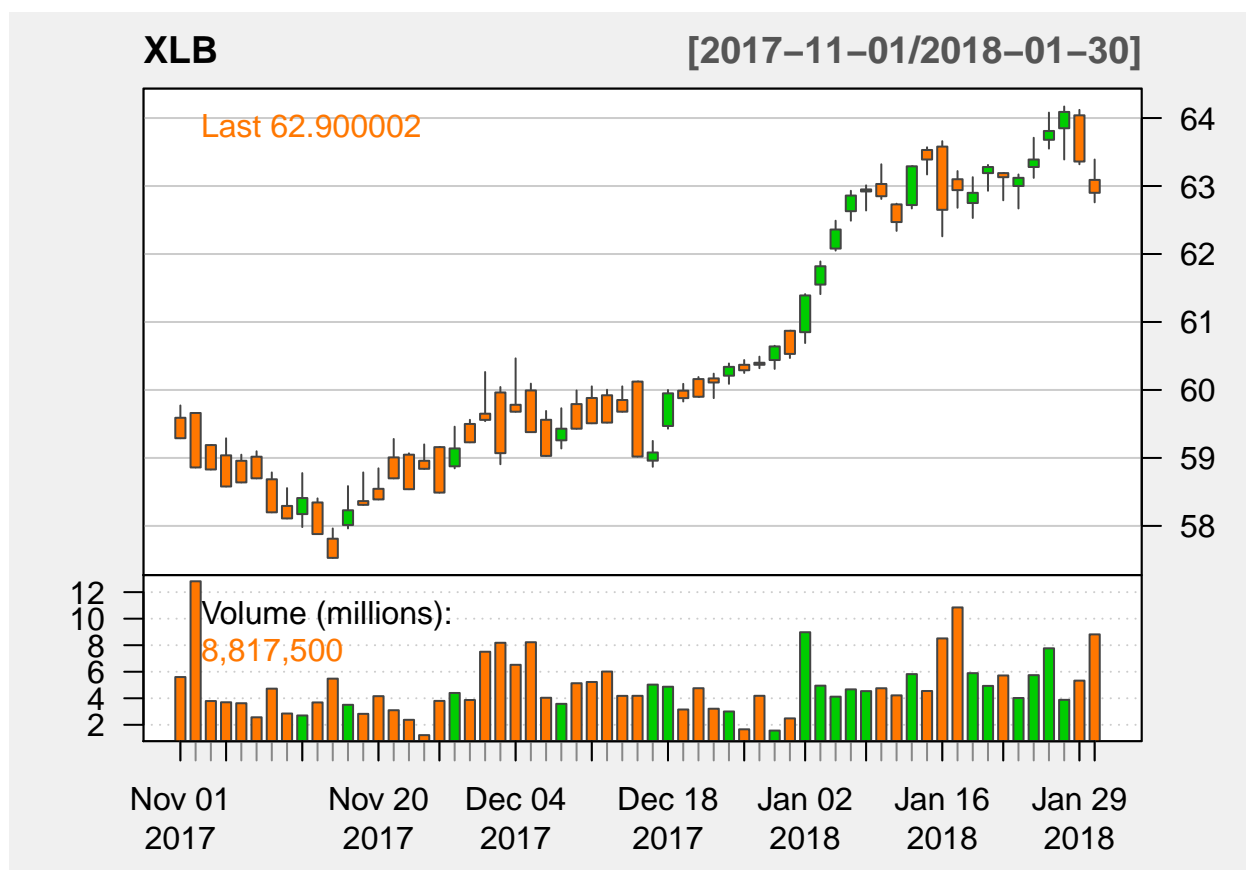
```
#Visualization
barChart(XLB[, c(6,5)], theme='white.monochrome', bar.type='hlc')
```

XLB[, c(6, 5)]

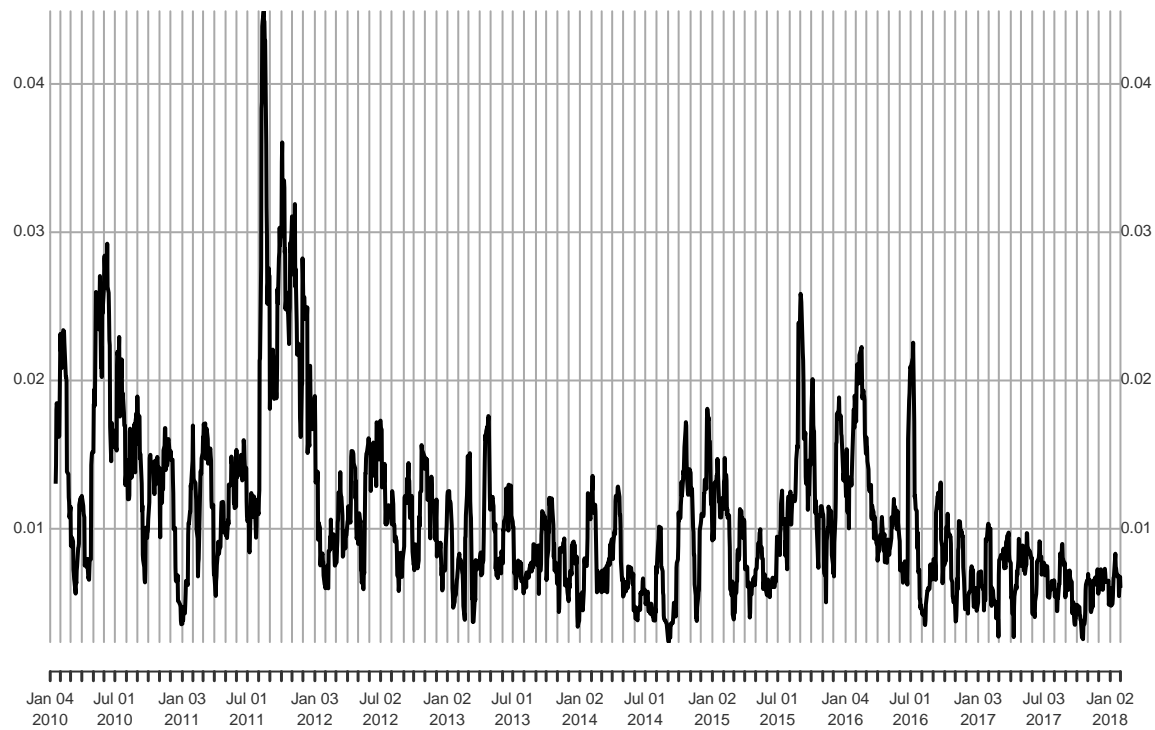
[2010-01-04/2018-01-30]



```
chartSeries(XLB, subset='last 3 months', theme = chartTheme('white'))
```



```
#Convert price into daily return
XLB_return = Delt(x1 = XLB[, 6,], k = 1, type = 'arithmetic')
#Calculate return volatility w/ 10-day rolling window
XLB_vol_rolling = rollapply(data = XLB_return, 10, sd)
plot(XLB_vol_rolling, main = 'XLB 10-DAY ROLLING VOLATILITY')
```



XLP

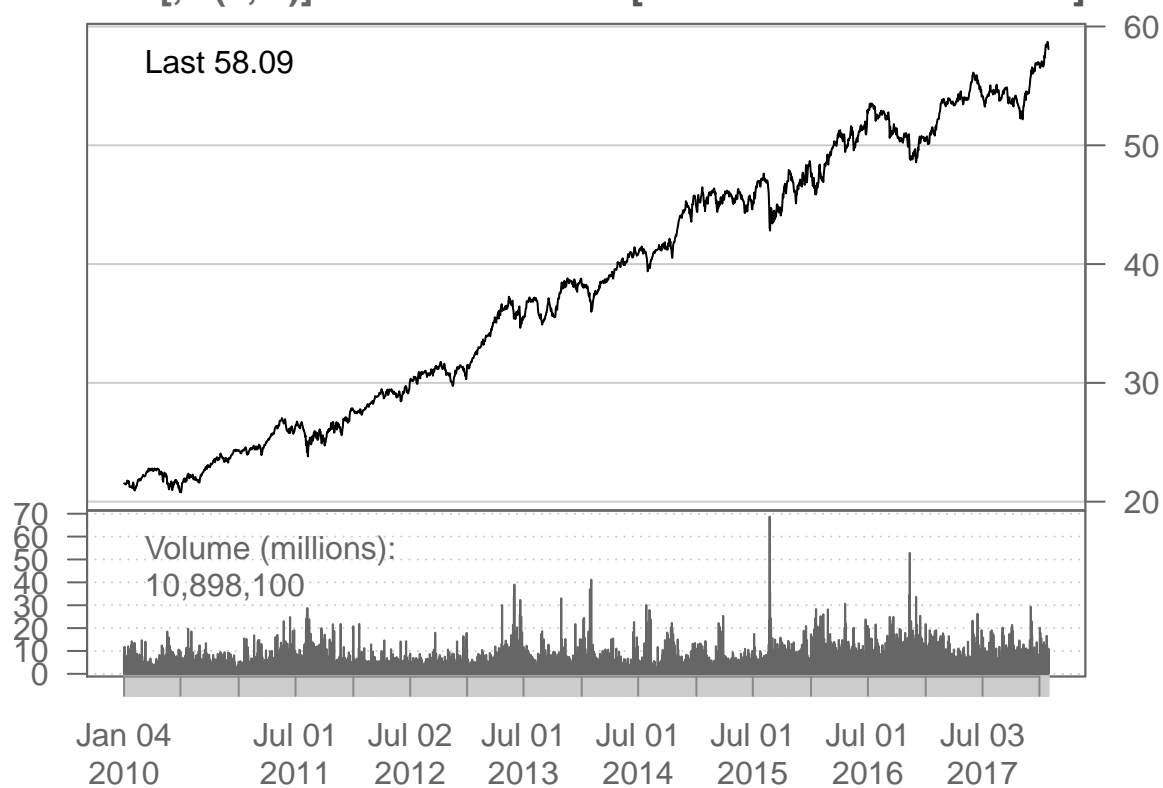
```
#Data Acquisition
getSymbols(Symbols = 'XLP', from = start_date, to = end_date)
```

```
## [1] "XLP"
```

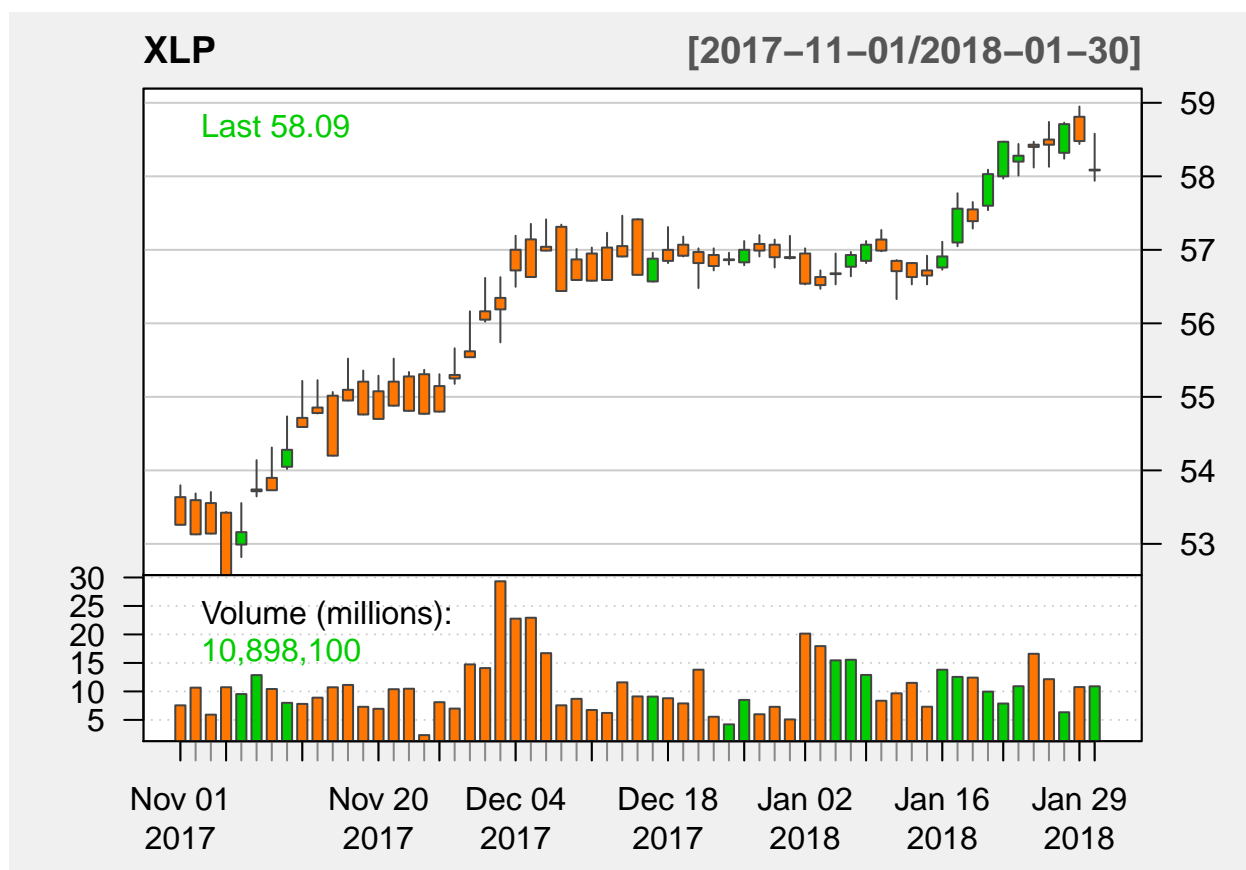
```
#Visualization
barChart(XLP[, c(6,5)], theme='white.mono', bar.type='hlc')
```

XLP[, c(6, 5)]

[2010-01-04/2018-01-30]



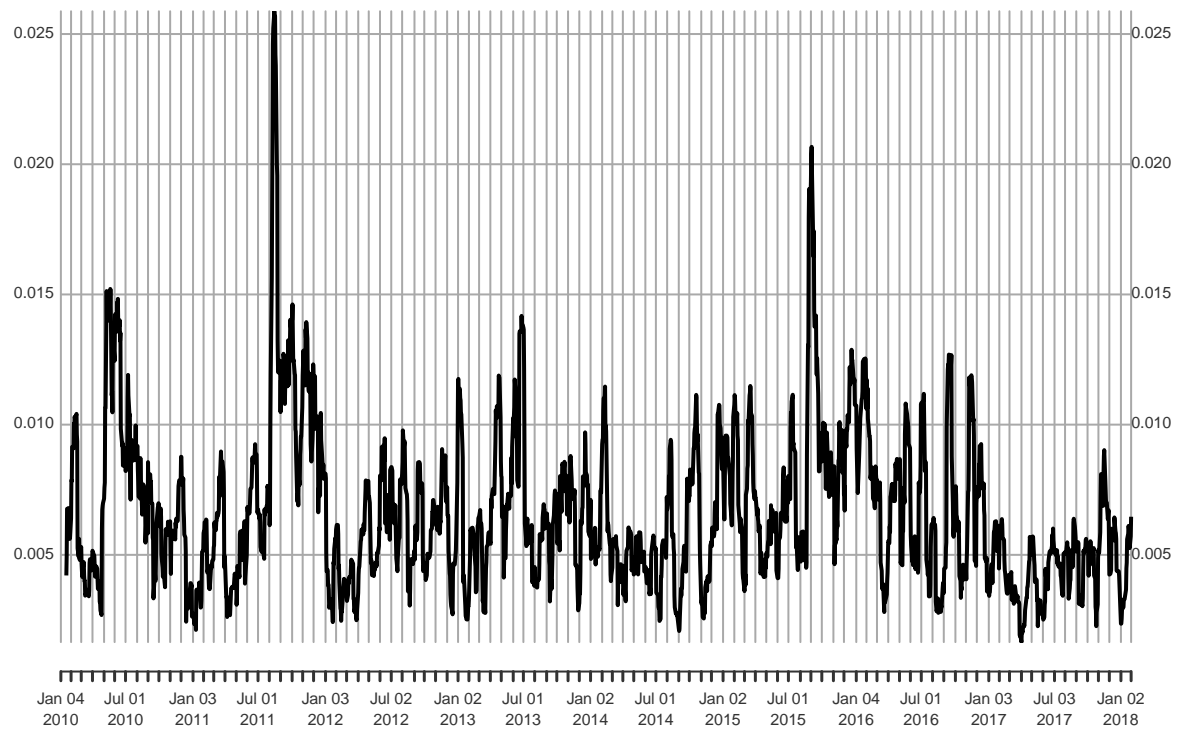
```
chartSeries(XLP, subset='last 3 months', theme = chartTheme('white'))
```



```
#Convert price into daily return
XLP_return = Delt(x1 = XLP[, 6,], k = 1, type = 'arithmetic')
#Calculate return volatility w/ 10-day rolling window
XLP_vol_rolling = rollapply(data = XLP_return, 10, sd)
plot(XLP_vol_rolling, main = 'XLP 10-DAY ROLLING VOLATILITY')
```

XLP 10-DAY ROLLING VOLATILITY

2010-01-04 / 2018-01-30



XLY

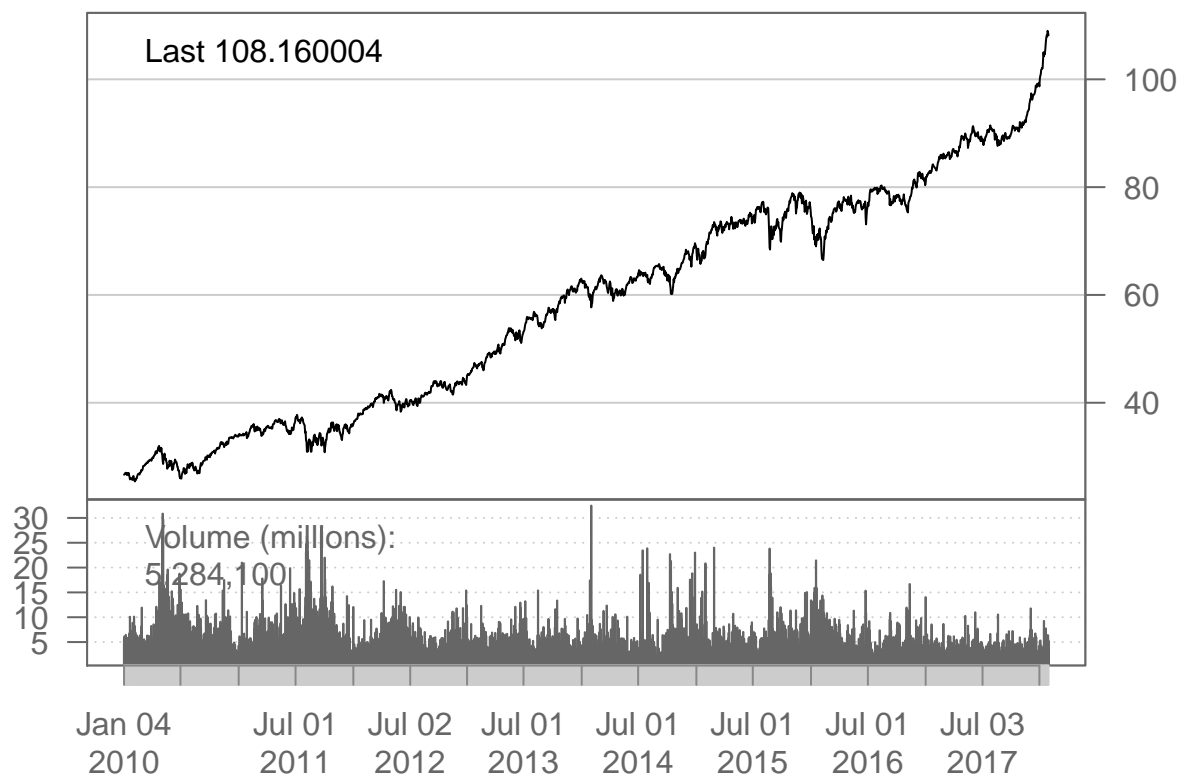
```
#Data Acquisition
getSymbols(Symbols = 'XLY', from = start_date, to = end_date)

## [1] "XLY"

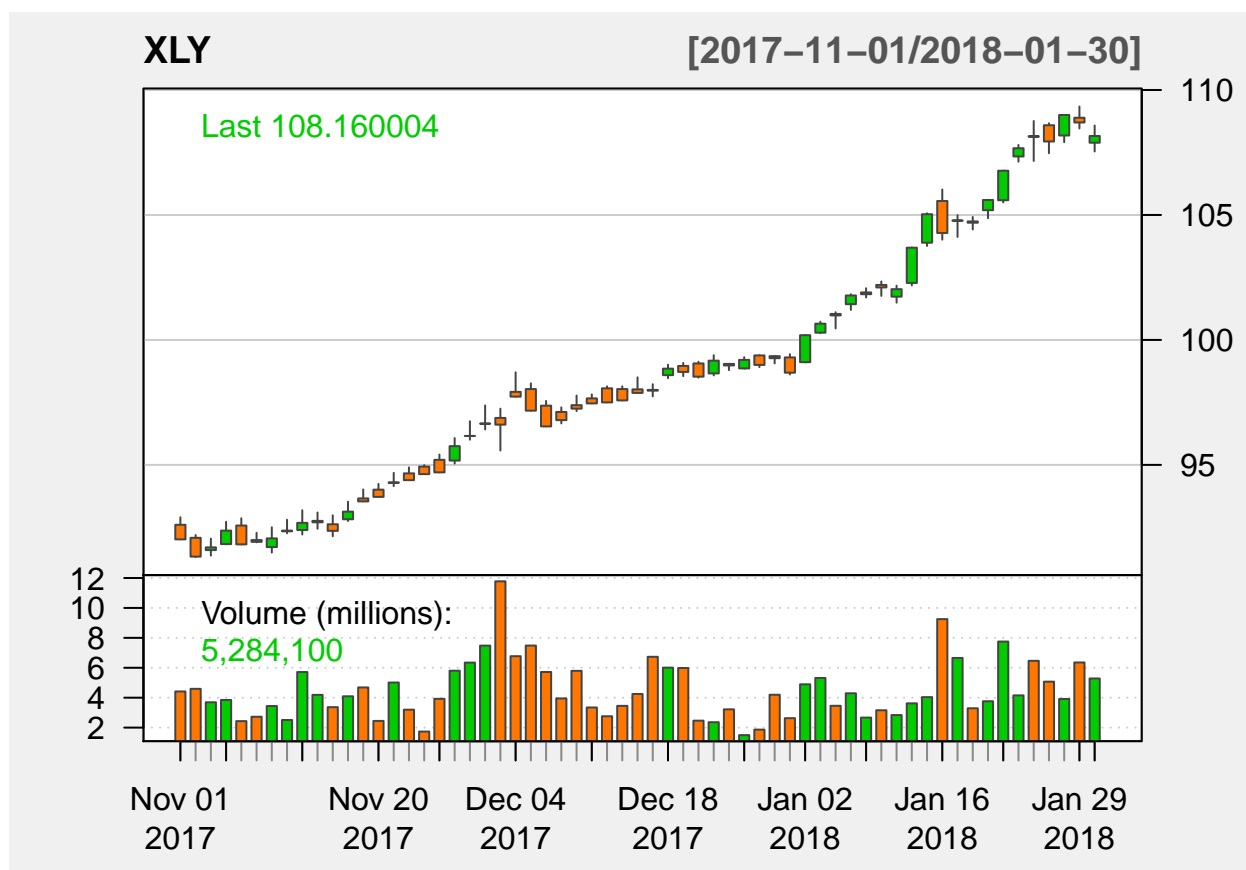
#Visualization
barChart(XLY[, c(6,5)], theme='white.mono', bar.type='hlc')
```

XLY[, c(6, 5)]

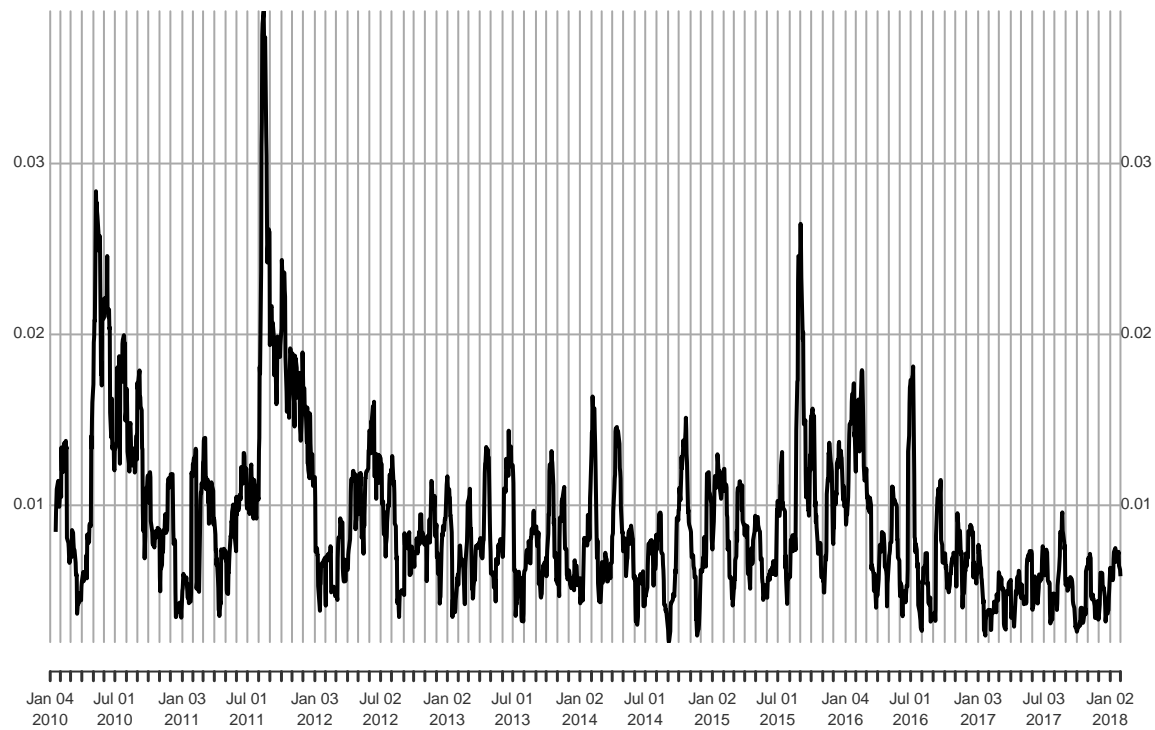
[2010-01-04/2018-01-30]



```
chartSeries(XLY, subset='last 3 months', theme = chartTheme('white'))
```

```
#Convert price into daily return
XLY_return = Delt(x1 = XLY[, 6,], k = 1, type = 'arithmetic')
#Calculate return volatility w/ 10-day rolling window
XLY_vol_rolling = rollapply(data = XLY_return, 10, sd)
plot(XLY_vol_rolling, main = 'XLY 10-DAY ROLLING VOLATILITY')
```



XLI

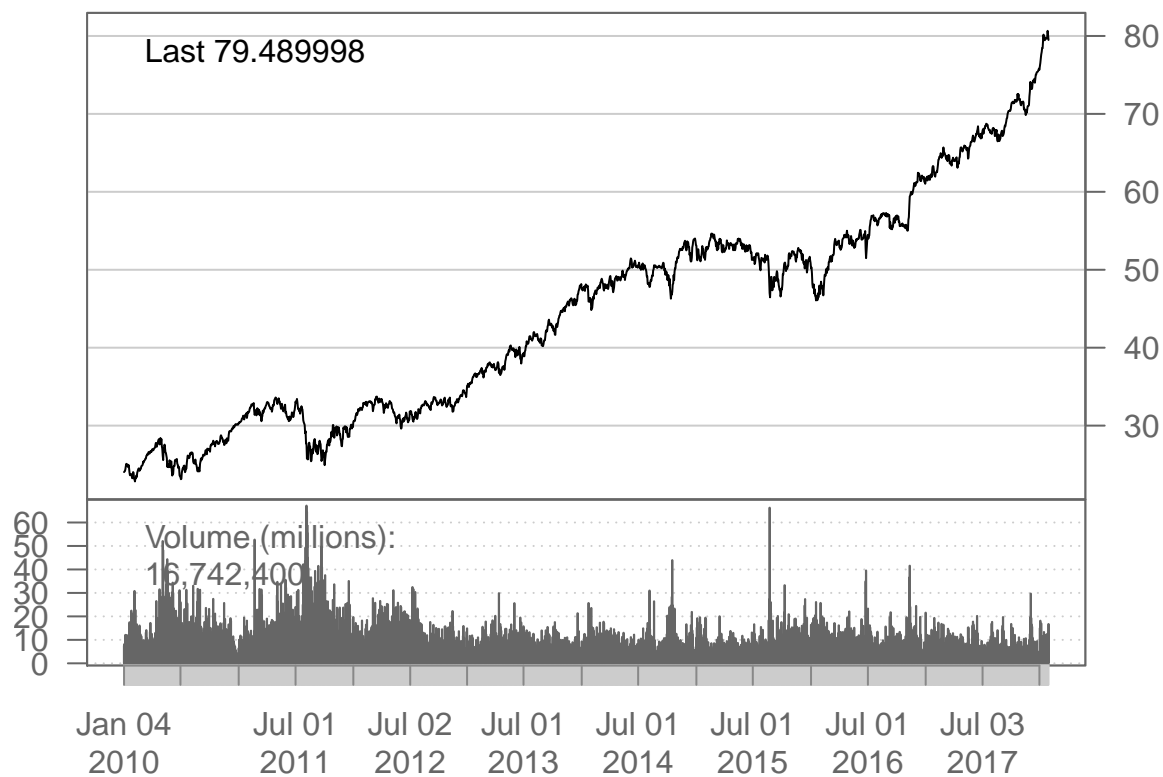
```
#Data Acquisition
getSymbols(Symbols = 'XLI', from = start_date, to = end_date)

## [1] "XLI"

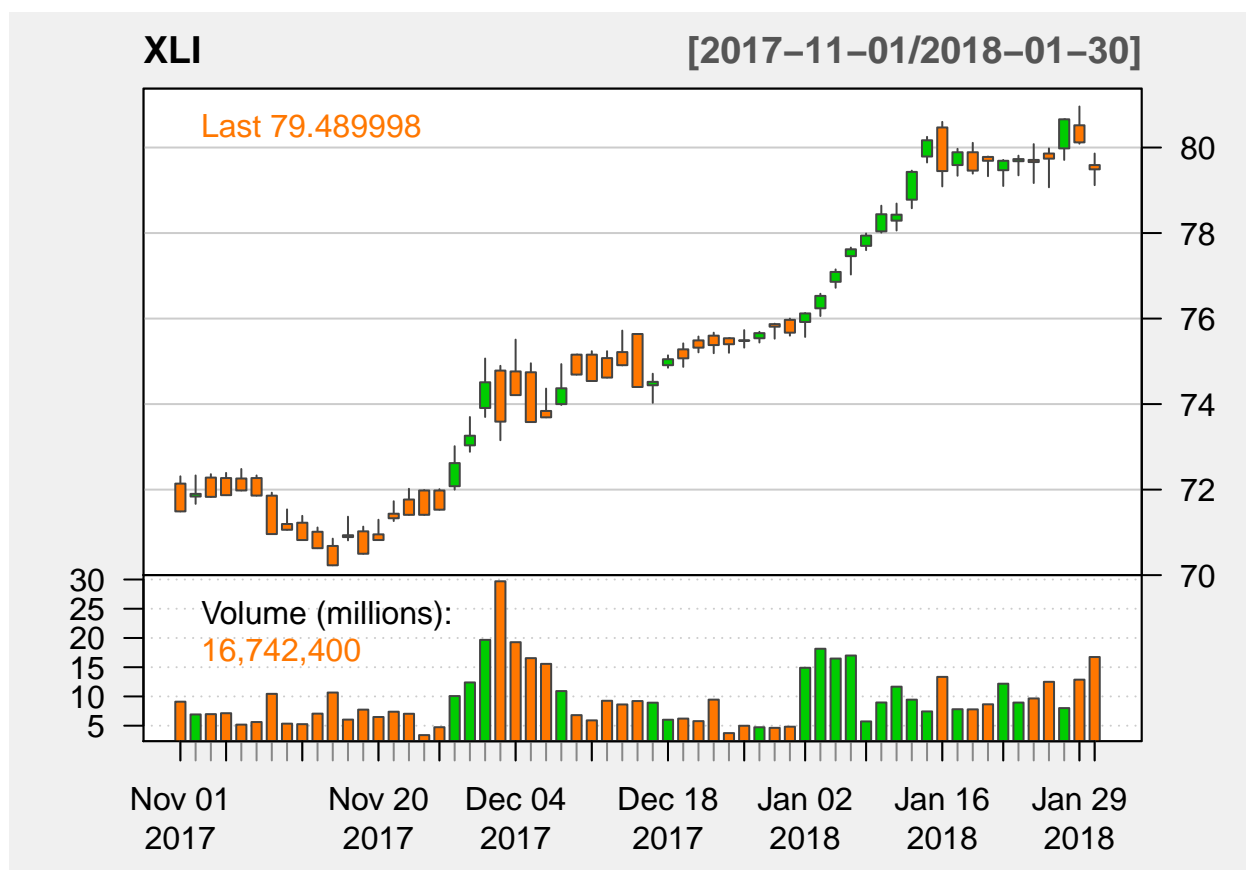
#Visualization
barChart(XLI[, c(6,5)], theme='white.monochrome', bar.type='hlc')
```

XLI[, c(6, 5)]

[2010-01-04/2018-01-30]



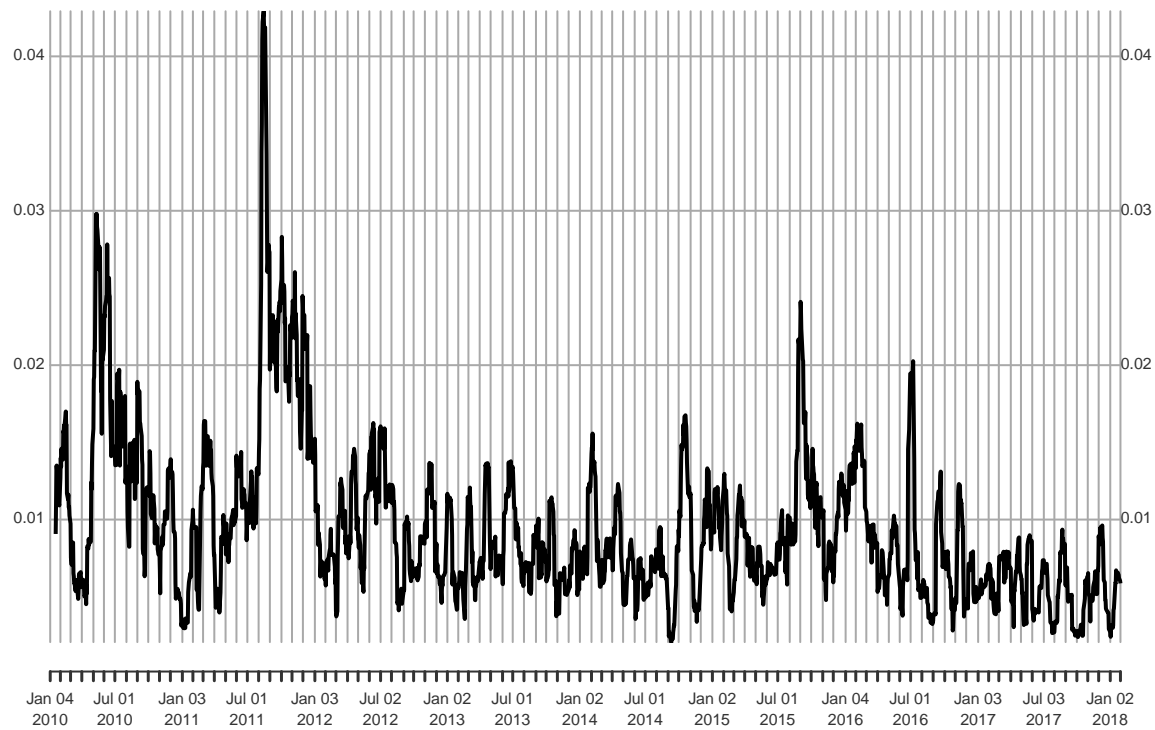
```
chartSeries(XLI, subset='last 3 months', theme = chartTheme('white'))
```



```
#Convert price into daily return
XLI_return = Delt(x1 = XLI[, 6,], k = 1, type = 'arithmetic')
#Calculate return volatility w/ 10-day rolling window
XLI_vol_rolling = rollapply(data = XLI_return, 10, sd)
plot(XLI_vol_rolling, main = 'XLI 10-DAY ROLLING VOLATILITY')
```

XLI 10-DAY ROLLING VOLATILITY

2010-01-04 / 2018-01-30



XLV

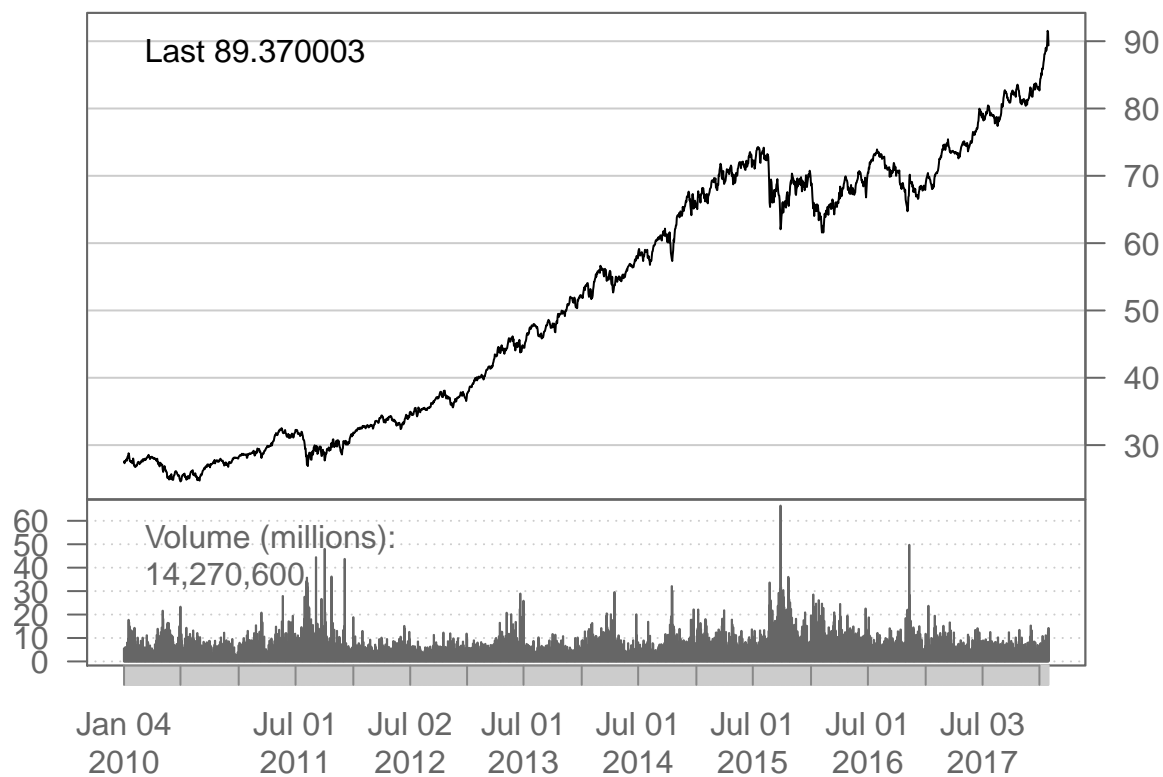
```
#Data Acquisition
getSymbols(Symbols = 'XLV', from = start_date, to = end_date)

## [1] "XLV"

#Visualization
barChart(XLV[, c(6,5)], theme='white.mono', bar.type='hlc')
```

XLV[, c(6, 5)]

[2010-01-04/2018-01-30]



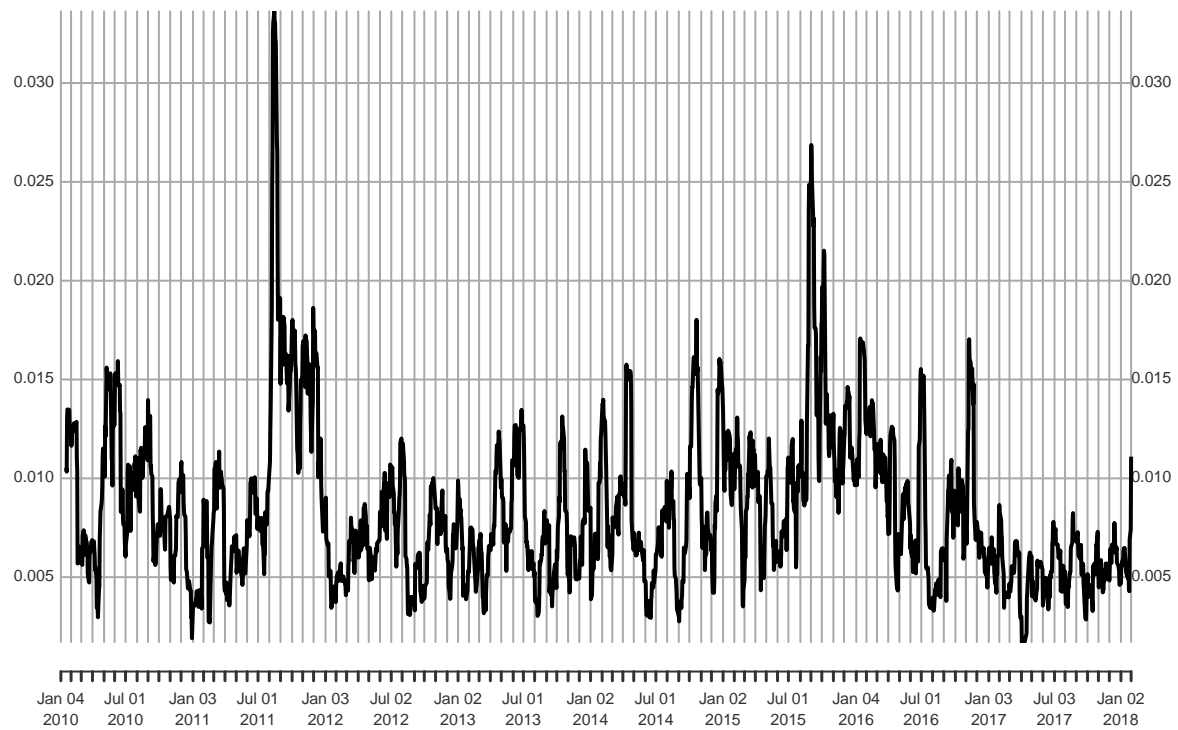
```
chartSeries(XLV, subset='last 3 months', theme = chartTheme('white'))
```

XLV

[2017-11-01/2018-01-30]



```
#Convert price into daily return
XLV_return = Delt(x1 = XLV[, 6,], k = 1, type = 'arithmetic')
#Calculate return volatility w/ 10-day rolling window
XLV_vol_rolling = rollapply(data = XLV_return, 10, sd)
plot(XLV_vol_rolling, main = 'XLV 10-DAY ROLLING VOLATILITY')
```

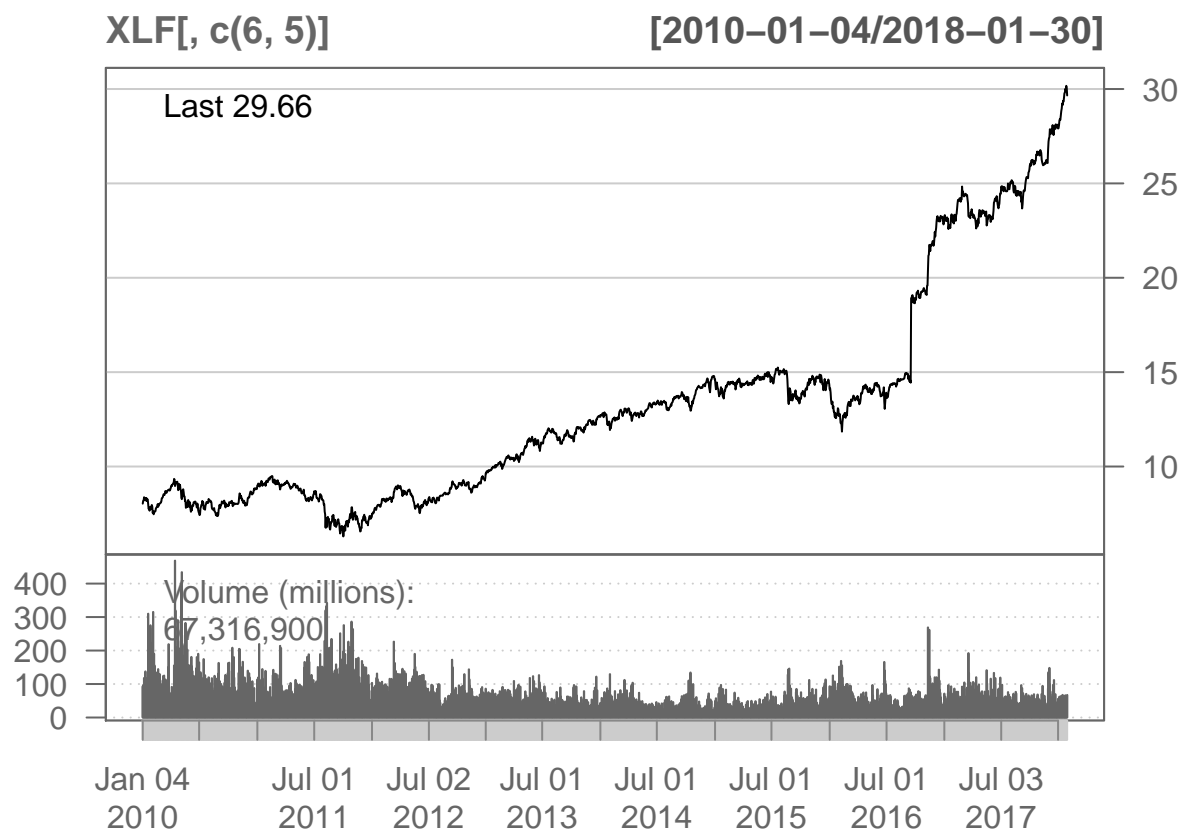


XLV

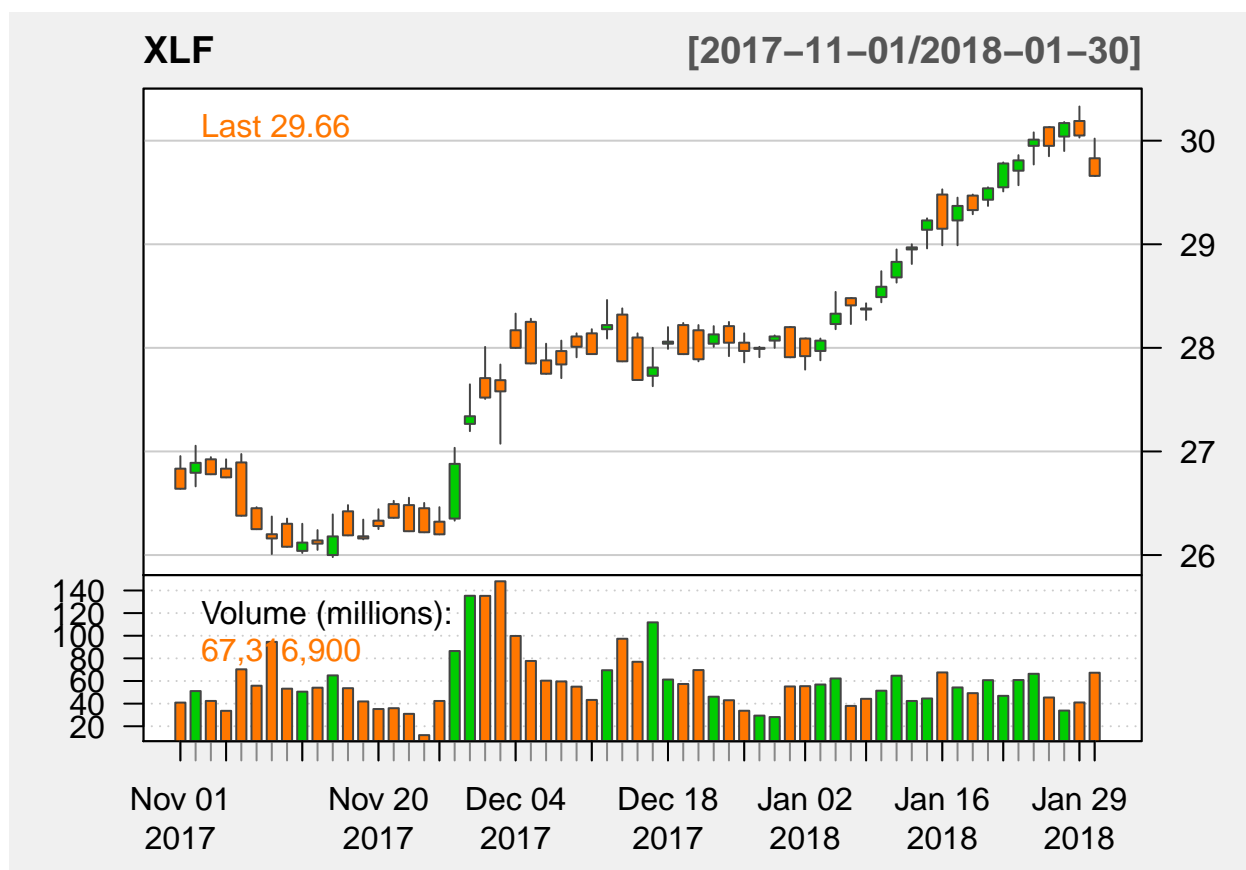
```
#Data Acquisition
getSymbols(Symbols = 'XLV', from = start_date, to = end_date)
```

```
## [1] "XLV"
```

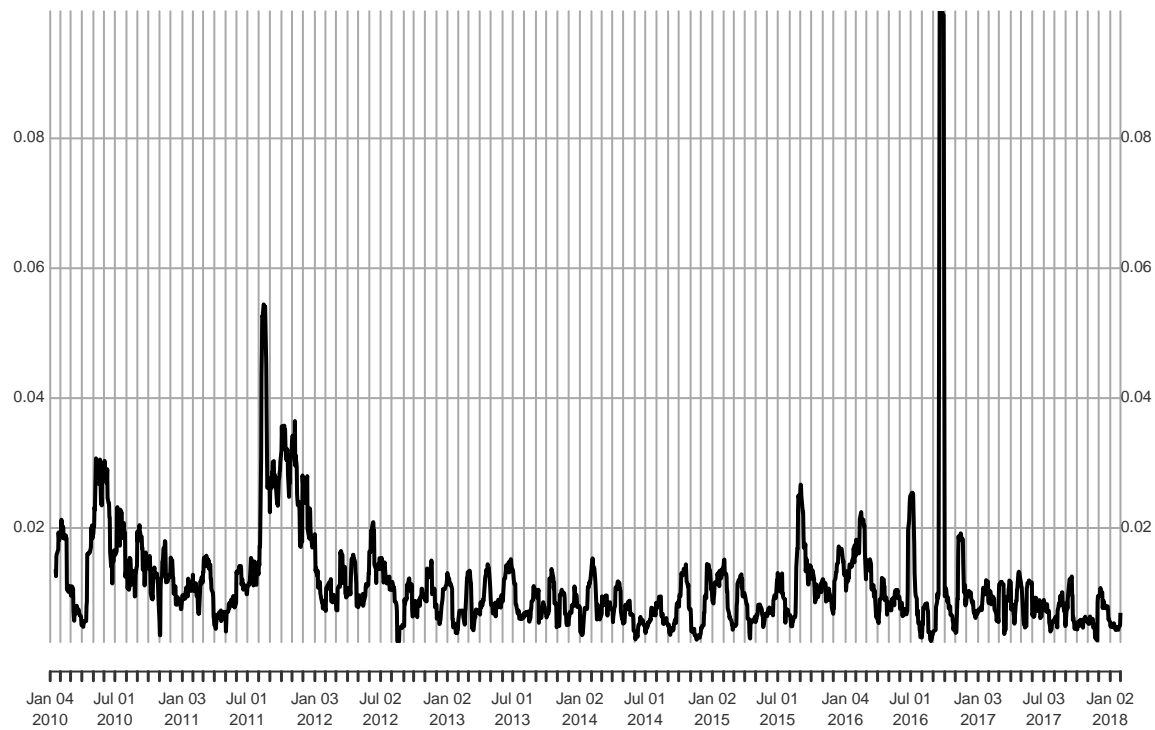
```
#Visualization
barChart(XLV[, c(6,5)], theme='white.mono', bar.type='hlc')
```

```
chartSeries(XLF, subset='last 3 months', theme = chartTheme('white'))
```



```
#Convert price into daily return
XLF_return = Delt(x1 = XLF[, 6,], k = 1, type = 'arithmetic')
#Calculate return volatility w/ 10-day rolling window
XLF_vol_rolling = rollapply(data = XLF_return, 10, sd)
plot(XLF_vol_rolling, main = 'XLF 10-DAY ROLLING VOLATILITY')
```



XLRE

```
# #Data Acquisition
# getSymbols(Symbols = 'XLRE', from = start_date, to = end_date)
# #Visualization
# barChart(XLRE[, c(6,5)],theme='white.mono',bar.type='hlc')
# chartSeries(XLRE, subset='last 3 months', theme = chartTheme('white'))
```