Stock Analytics

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```r
#Load Libraries
library(tidyverse)
```

```
## -- Attaching packages --------------------------------------------------------- tidyverse 1.3.0 --
```

```
## v ggplot2 3.3.2     v purrr   0.3.4
## v tibble  3.0.2     v dplyr   1.0.2
## v tidyr   1.1.0     v stringr 1.4.0
## v readr   1.3.1     v forcats 0.5.0
```

```
## Warning: package 'purrr' was built under R version 4.0.3
```

```
## Warning: package 'dplyr' was built under R version 4.0.3
```

```
## -- Conflicts ------------------------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```r
library(TTR)
```

```
## Warning: package 'TTR' was built under R version 4.0.3
```

```r
library(quantmod)
```

```
## Warning: package 'quantmod' was built under R version 4.0.3
```

```
## Loading required package: xts
```

```
## Warning: package 'xts' was built under R version 4.0.3
```

```
## Loading required package: zoo
```

```
## Warning: package 'zoo' was built under R version 4.0.3
```

```
##
## Attaching package: 'zoo'
```

```
## The following objects are masked from 'package:base':
##
##     as.Date, as.Date.numeric
```

```
##
## Attaching package: 'xts'
```

```
## The following objects are masked from 'package:dplyr':
##
##     first, last
```

```
## Registered S3 method overwritten by 'quantmod':
##   method            from
##   as.zoo.data.frame zoo
```

```
## Version 0.4-0 included new data defaults. See ?getSymbols.
```

```r
library(PerformanceAnalytics)
```

```
## Warning: package 'PerformanceAnalytics' was built under R version 4.0.3
```

```
##
## Attaching package: 'PerformanceAnalytics'
```

```
## The following object is masked from 'package:graphics':
##
##     legend
```

```r
library(RColorBrewer)
```

```
## Warning: package 'RColorBrewer' was built under R version 4.0.3
```

```r
library(tseries)
```

```
## Warning: package 'tseries' was built under R version 4.0.3
```

```r
library(lubridate)
```

```
## Warning: package 'lubridate' was built under R version 4.0.3
```

```
##
## Attaching package: 'lubridate'
```

```
## The following objects are masked from 'package:base':
##
##     date, intersect, setdiff, union
```

```r
library(Quandl)
```

```
## Warning: package 'Quandl' was built under R version 4.0.3
```

```r
#Capture data for a stock

#Microsoft Stock
MSFT <- getSymbols('MSFT', auto.assign = FALSE)
```

```
## 'getSymbols' currently uses auto.assign=TRUE by default, but will
## use auto.assign=FALSE in 0.5-0. You will still be able to use
## 'loadSymbols' to automatically load data. getOption("getSymbols.env")
## and getOption("getSymbols.auto.assign") will still be checked for
## alternate defaults.
##
## This message is shown once per session and may be disabled by setting
## options("getSymbols.warning4.0"=FALSE). See ?getSymbols for details.
```

```r
head(MSFT)
```

```
##            MSFT.Open MSFT.High MSFT.Low MSFT.Close MSFT.Volume MSFT.Adjusted
## 2007-01-03     29.91     30.25    29.40      29.86    76935100      22.01271
## 2007-01-04     29.70     29.97    29.44      29.81    45774500      21.97584
## 2007-01-05     29.63     29.75    29.45      29.64    44607200      21.85052
## 2007-01-08     29.65     30.10    29.53      29.93    50220200      22.06430
## 2007-01-09     30.00     30.18    29.73      29.96    44636600      22.08643
## 2007-01-10     29.80     29.89    29.43      29.66    55017400      21.86527
```

```r
dim(MSFT)
```

```
## [1] 3504    6
```

```r
#Tesla Stock
tsla <- getSymbols('TSLA', auto.assign = FALSE)
tail(tsla)
```

```
##            TSLA.Open TSLA.High TSLA.Low TSLA.Close TSLA.Volume TSLA.Adjusted
## 2020-11-23    503.50    526.00   501.79     521.85    50260300        521.85
## 2020-11-24    540.40    559.99   526.20     555.38    53648500        555.38
## 2020-11-25    550.06    574.00   545.37     574.00    48930200        574.00
## 2020-11-27    581.16    598.78   578.45     585.76    37561100        585.76
## 2020-11-30    602.21    607.80   554.51     567.60    63003100        567.60
## 2020-12-01    597.59    597.85   572.05     584.76    40103500        584.76
```

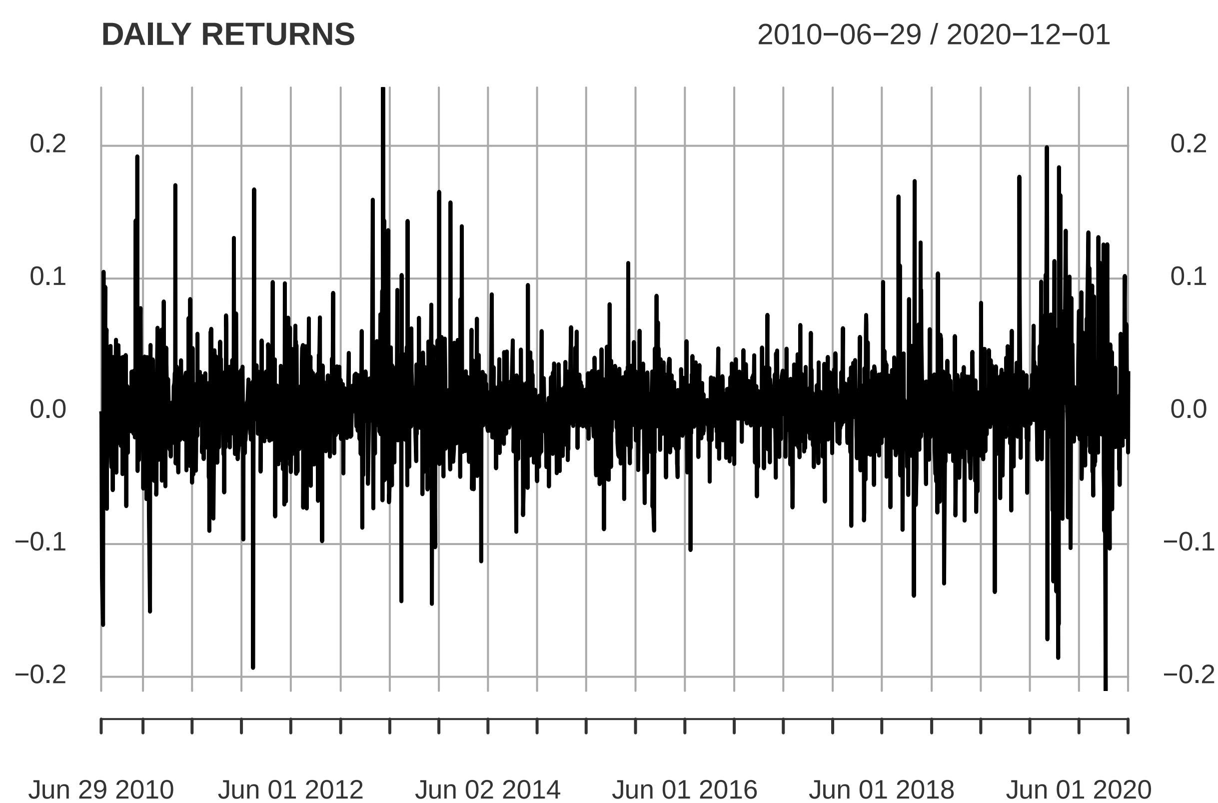
```r
options(scipen = 9999)

#Create a Daily Return and Chart the data dfor a single stock

tail(dailyReturn(tsla$TSLA.Adjusted))
```

```
##            daily.returns
## 2020-11-23    0.06584831
## 2020-11-24    0.06425224
## 2020-11-25    0.03352659
## 2020-11-27    0.02048782
## 2020-11-30   -0.03100252
## 2020-12-01    0.03023262
```

```r
plot(dailyReturn(tsla$TSLA.Adjusted), main = 'DAILY RETURNS')
```



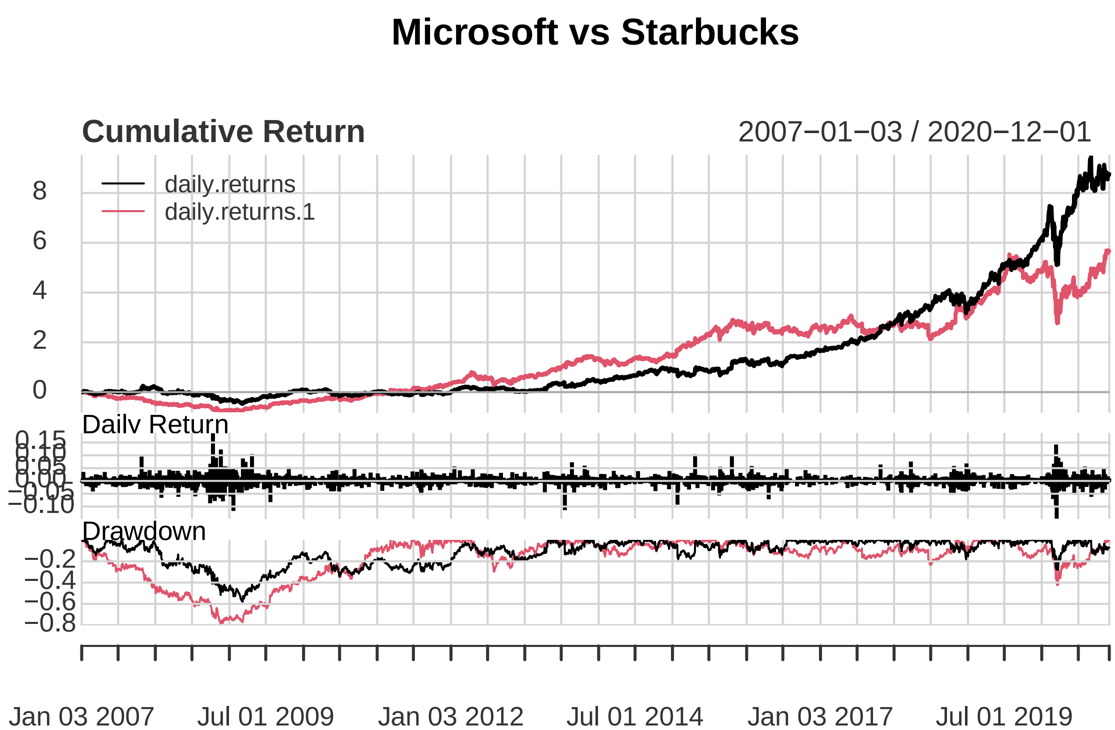
```r
#Comparing Multiple Stocks

msft_ad <- Ad(MSFT)
msft_daily <- dailyReturn(msft_ad)

#Starbucks Stock
sbux <- getSymbols('SBUX', auto.assign = FALSE)
sbux_daily <- dailyReturn(Ad(sbux))

#Combine both stocks
comb <- merge(msft_daily, sbux_daily)

#Plot
charts.PerformanceSummary(comb, main = 'Microsoft vs Starbucks')
```




```r
#Sharp Ratio
table.AnnualizedReturns(comb, scale = 252, Rf = 0.004/252)
```

```
##                               daily.returns daily.returns.1
## Annualized Return                    0.1786          0.1467
## Annualized Std Dev                   0.2855          0.3161
## Annualized Sharpe (Rf=0.4%)          0.6090          0.4495
```