Graphiques pour l'Analyse technique des Actifs financiers

Josue Afouda

26/07/2021

Get Data

```
# get MSFT Data

msft <- getSymbols("MSFT", auto.assign = F)
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      21.91154
## 2007-01-04     29.70     29.97    29.44      29.81    45774500      21.87483
## 2007-01-05     29.63     29.75    29.45      29.64    44607200      21.75009
## 2007-01-08     29.65     30.10    29.53      29.93    50220200      21.96289
## 2007-01-09     30.00     30.18    29.73      29.96    44636600      21.98492
## 2007-01-10     29.80     29.89    29.43      29.66    55017400      21.76477
```

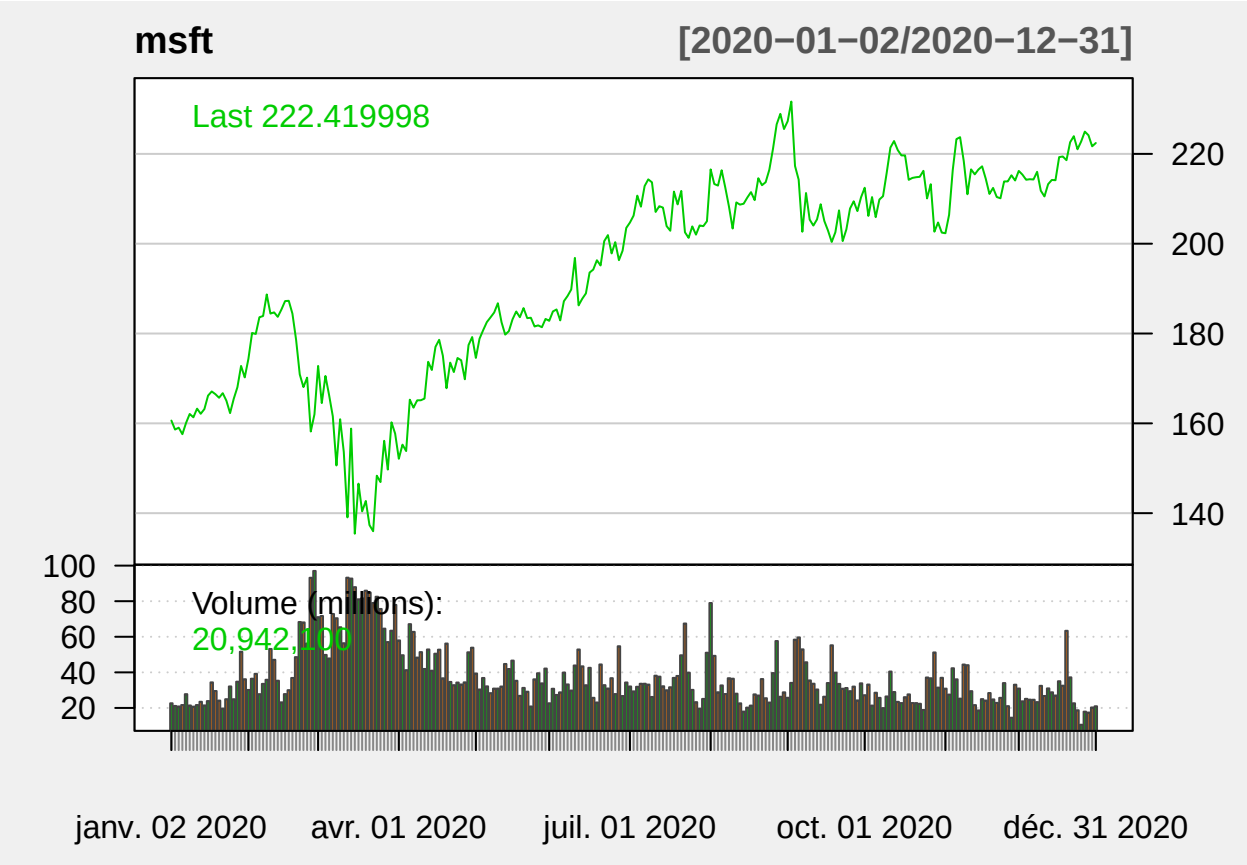
```
# Tesla Daily Returns

tsla <- getSymbols("TSLA", auto.assign = F)

tsla_daily_returns <- dailyReturn(tsla$TSLA.Adjusted)

head(tsla_daily_returns)
```

```
##            daily.returns
## 2010-06-29   0.000000000
## 2010-06-30  -0.002511511
## 2010-07-01  -0.078472514
## 2010-07-02  -0.125683060
## 2010-07-06  -0.160937500
## 2010-07-07  -0.019242706
```

Charting

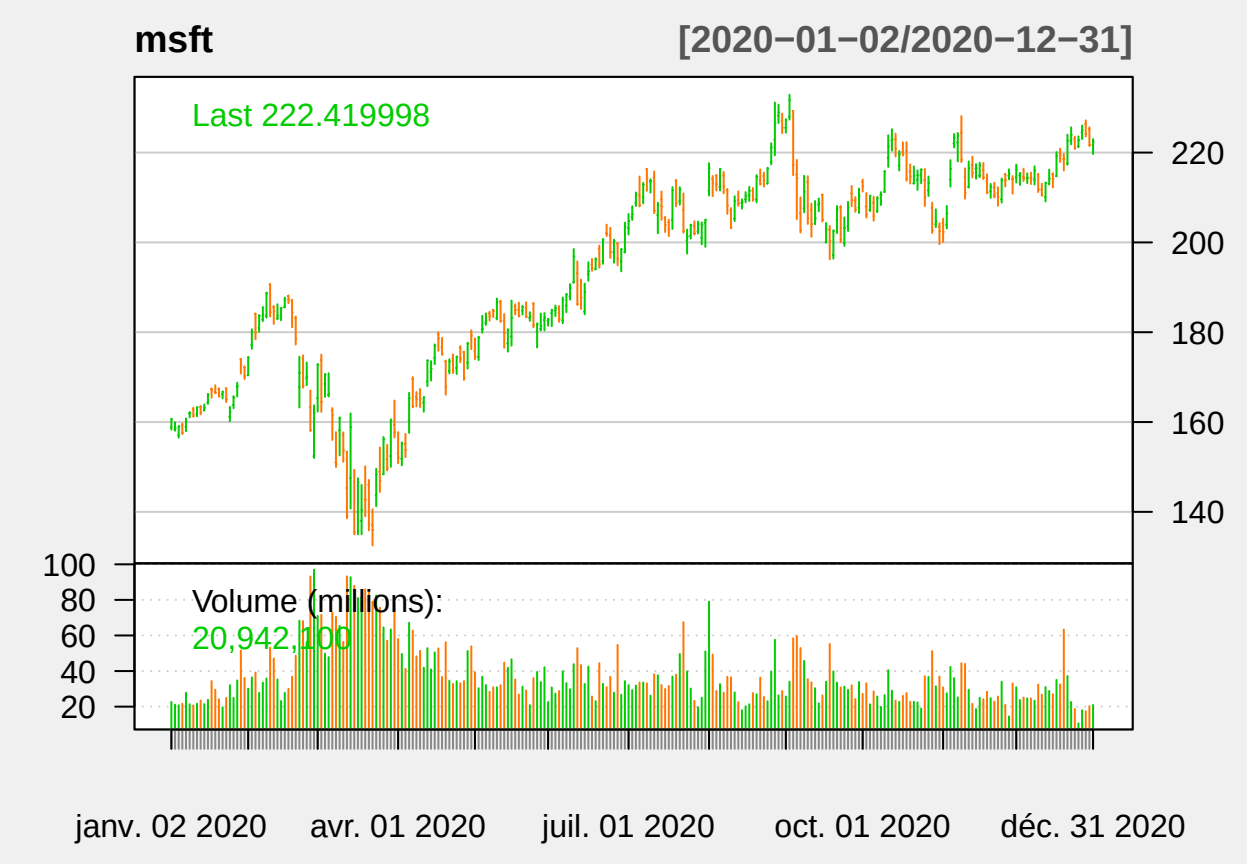
Line Graph

```
chartSeries(
  msft,
  # type : "auto", "candlesticks", "matchsticks", "bars","line"
  type = "line",
  subset = "2020",
  theme = chartTheme("white")
)
```



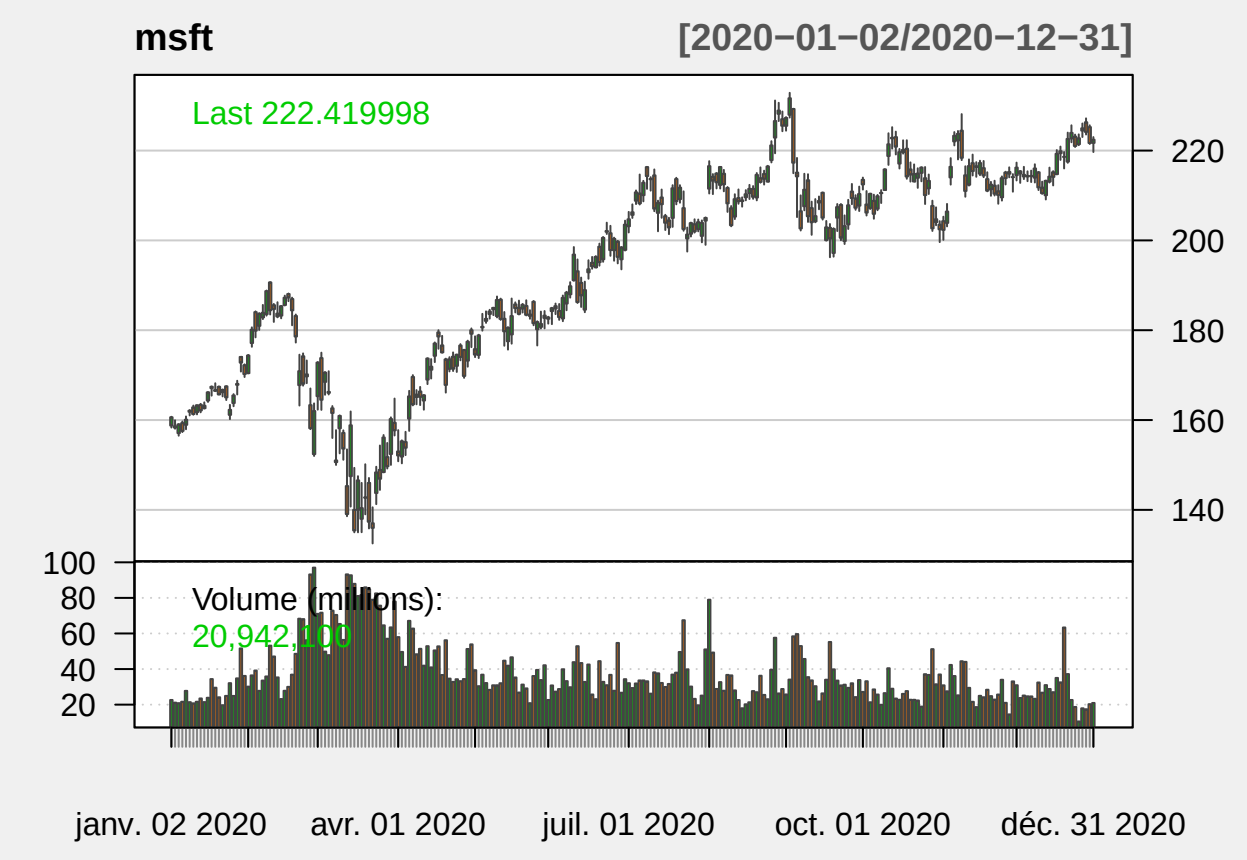
Bar Chart

```
chartSeries(
  msft,
  type = "bar",
  subset = "2020",
  theme = chartTheme("white")
)
```



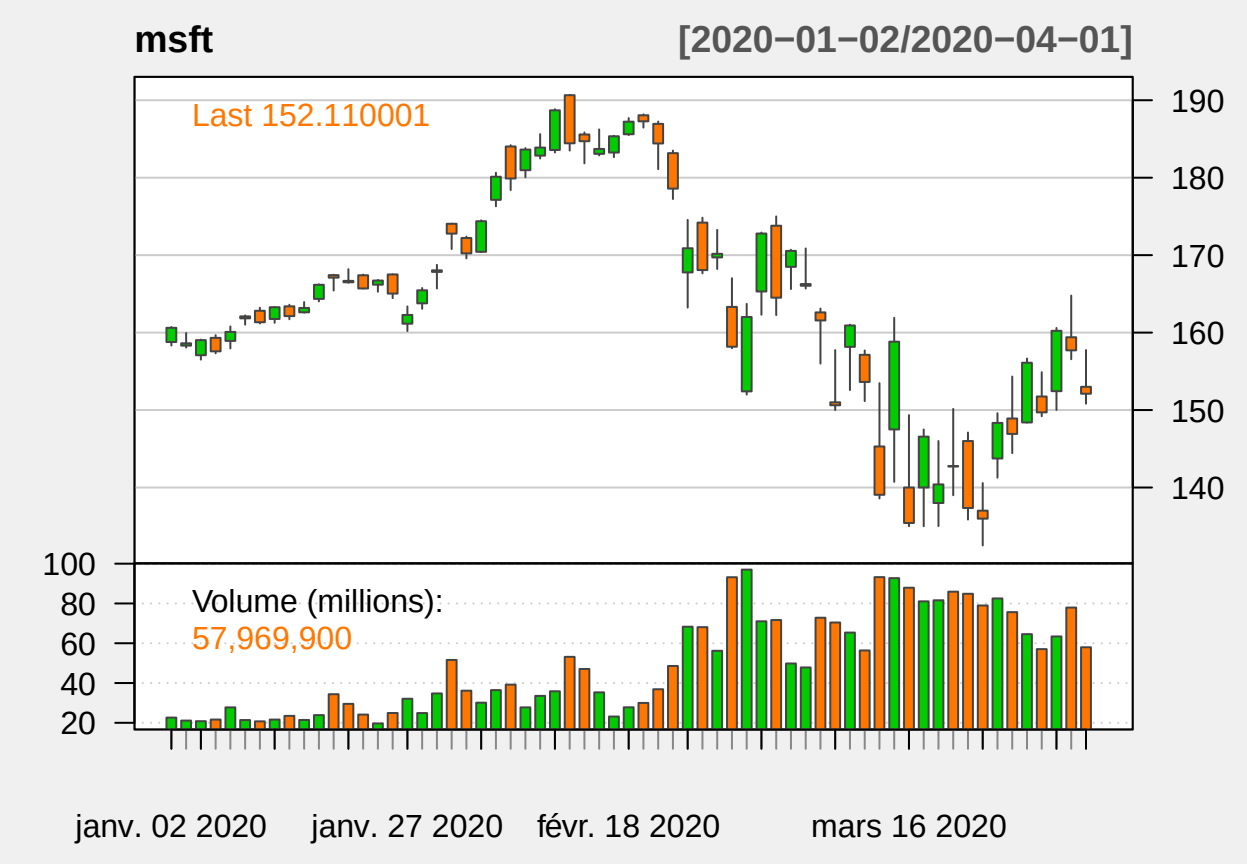
Candlesticks

```
chartSeries(
  msft,
  type = "candlesticks",
  subset = "2020",
  theme = chartTheme("white")
)
```



Auto

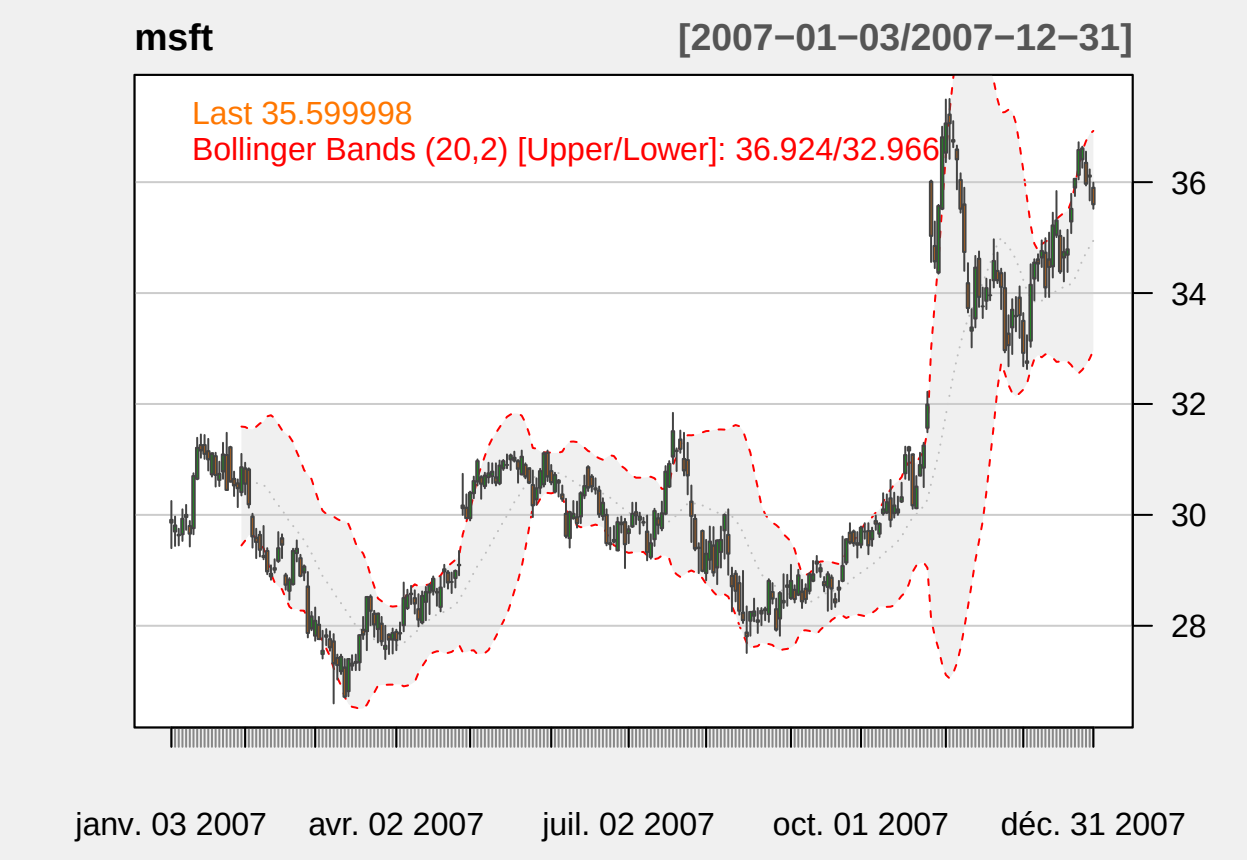
```
# Pour zoomer sur une période précise
chartSeries(
  msft,
  type = "auto",
  subset = "2020-01-01::2020-04-01",
  theme = chartTheme("white")
)
```



Bollinger Bands

Bollinger Bands consist of a centerline and two price channels (bands) above and below it. The centerline is an exponential moving average; the price channels are the standard deviations of the stock being studied. The bands will expand and contract as the price action of an issue becomes volatile (expansion) or becomes bound into a tight trading pattern (contraction).

```
chartSeries(
  msft,
  subset = "2007",
  # TA : a vector of technical indicators and params, or character strings
  TA = "addBBands(n = 20, sd = 2)", # n=20 : moyenne mobile sur 20 jours, Simple Moving Average SMA
  theme = chartTheme("white") # "black" aussi
)
```



- n : number of moving average periods
- sd : number of standard deviations

Voir documentation (?addBBands)

RSI

```
chartSeries(
  msft,
  subset = "2007",
  # TA : a vector of technical indicators and params, or character strings
  TA = c(addBBands(n = 20, sd = 2), addRSI()),
  theme = chartTheme("white")
)
```

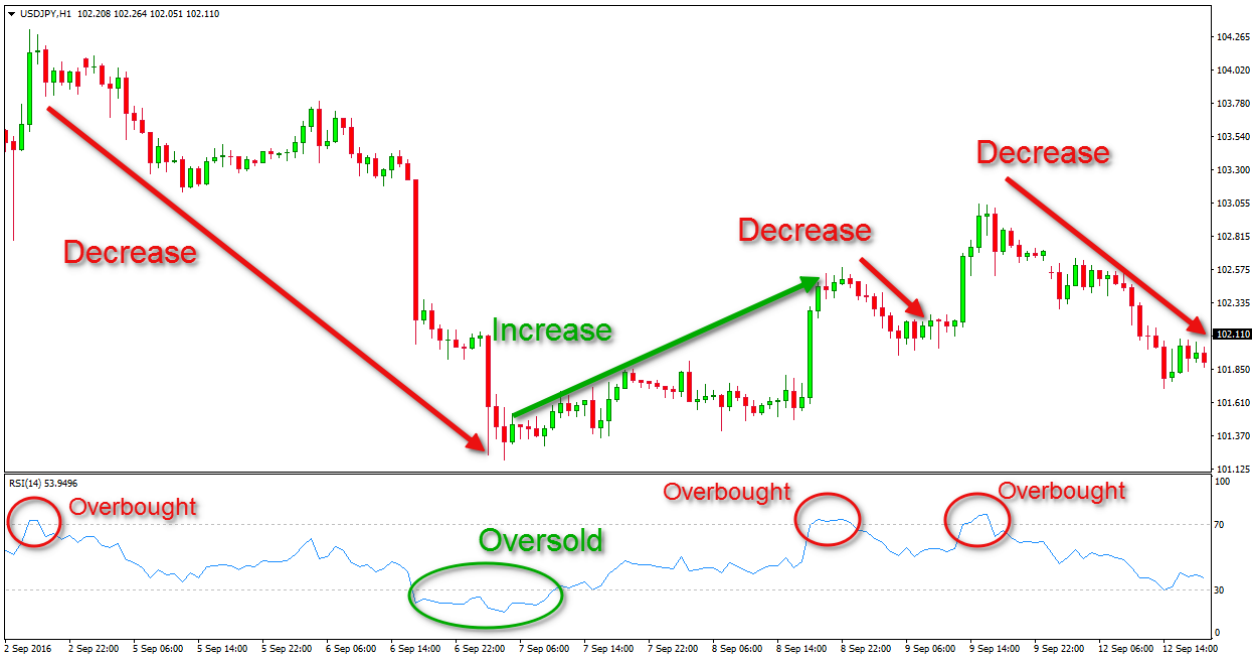
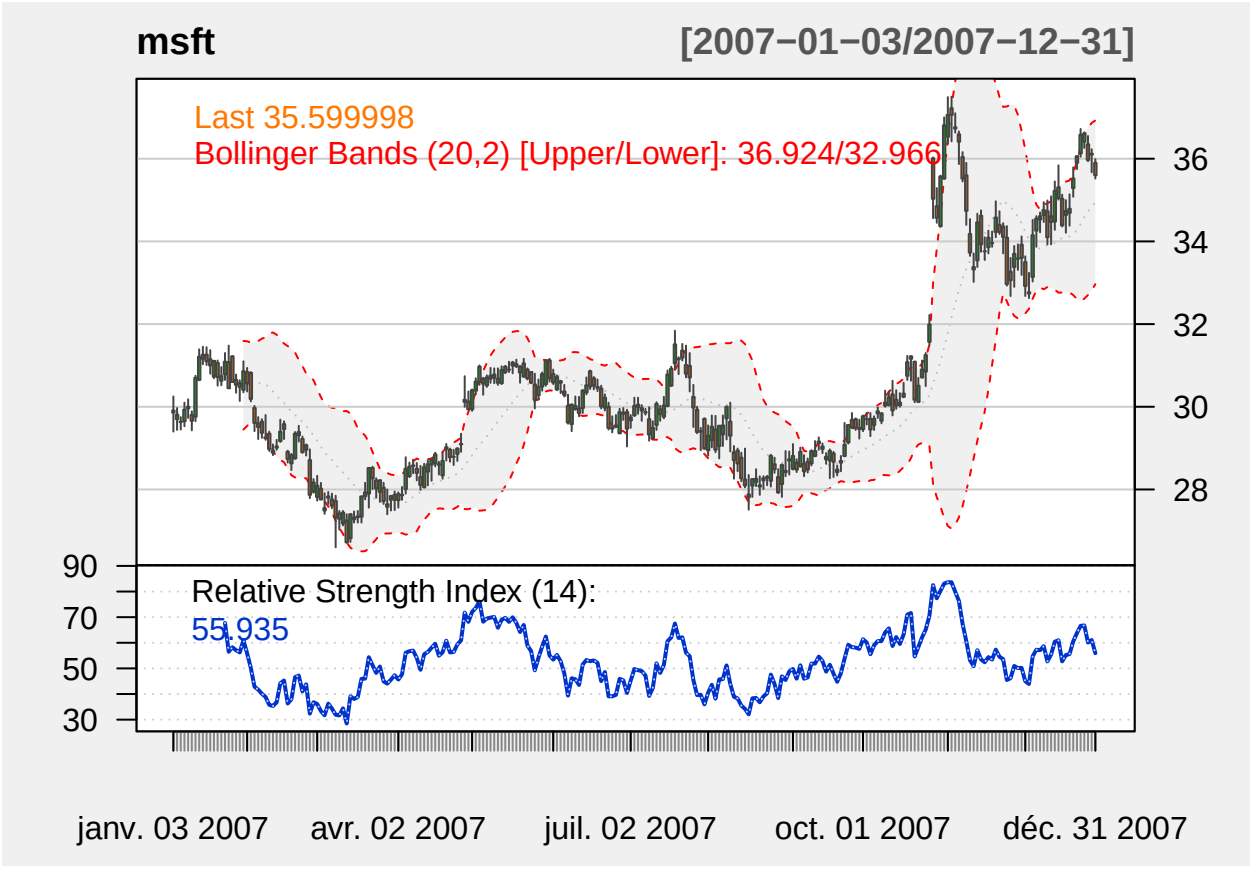
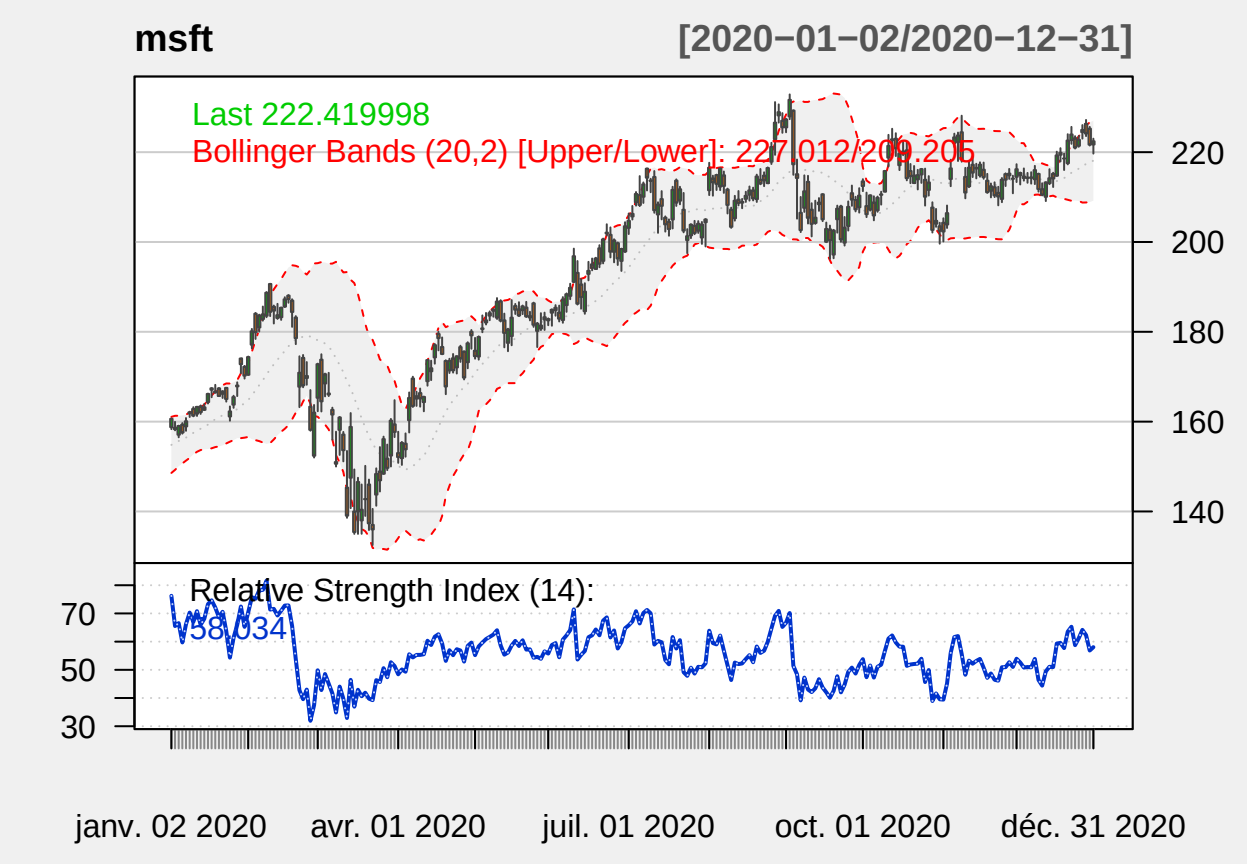


Figure 1: A Caption



```
# Pour 2020

chartSeries(
  msft,
  subset = "2020",
  # TA : a vector of technical indicators and params, or character strings
  TA = c(addBBands(n = 20, sd = 2), addRSI()),
  theme = chartTheme("white")
)
```



MACD (Moving Average Convergence Divergence)

```
chartSeries(
  msft,
  subset = "2007",
  # TA : a vector of technical indicators and params, or character strings
  TA = c(addBBands(n = 20, sd = 2), addRSI(), addMACD()),
  theme = chartTheme("white")
)
```

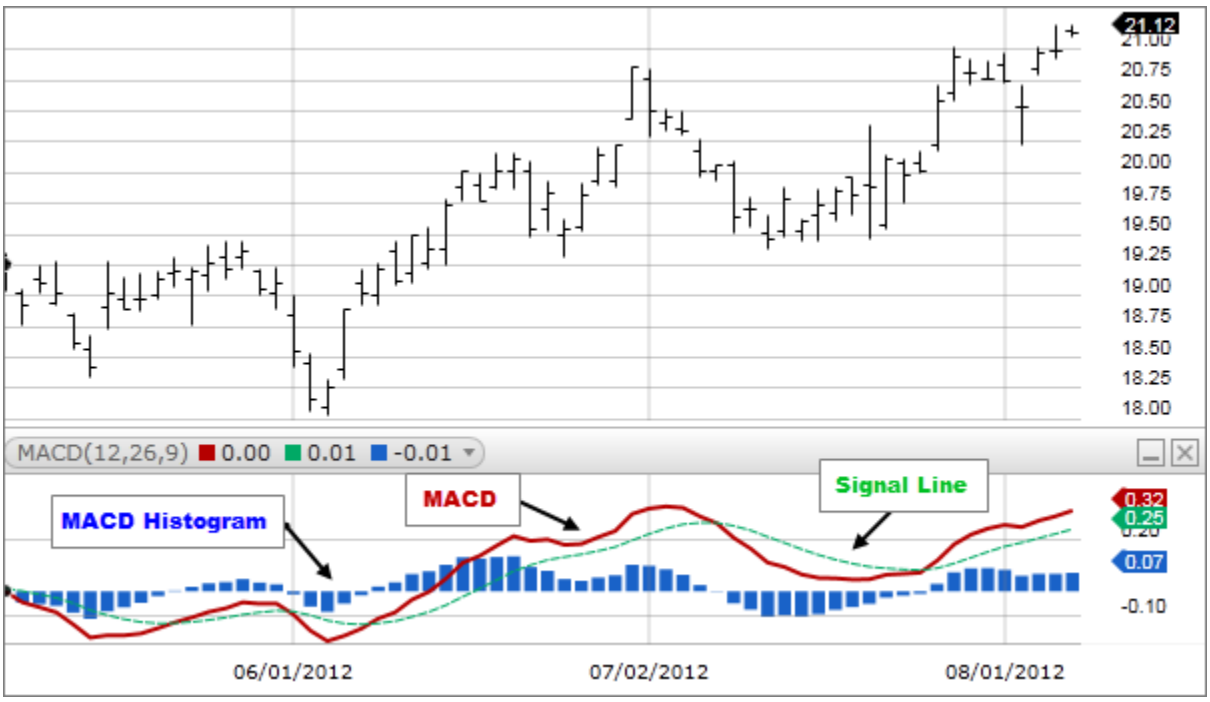


Figure 2: A Caption

Add Exponentiel Moving Average

```
chartSeries(
  msft,
  subset = "2007",
  # TA : a vector of technical indicators and params, or character strings
  TA = c(addBBands(n = 20, sd = 2), addRSI(), addEMA(n = 30), addMACD()),
  theme = chartTheme("white")
)
```

How is an EMA calculated?

use a weighted average that gives greater importance to more recent days to make it more responsive to new information.