04 Importing and Managing Financial Data

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Use getSymbols()

```
library(quantmod)
```

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

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

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

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

```
## Loading required package: TTR
```

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

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

```
getSymbols(Symbols = "AAPL", src = "av", api.key = "0ST2PMQENLUXD5YT")
```

```
## '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.
```

```
## [1] "AAPL"
```

```
# alphavantage OST2PMQENLUXD5YT
# src can be alphavantage (av), google, yahoo, fred
first(AAPL, 5)
```

```
##            AAPL.Open AAPL.High AAPL.Low AAPL.Close AAPL.Volume
## 2020-04-15    282.40    286.33   280.63     284.43    32788600
## 2020-04-16    287.38    288.20   282.35     286.69    39281300
## 2020-04-17    284.69    286.95   276.86     282.80    53812500
## 2020-04-20    277.95    281.68   276.85     276.93    32503800
## 2020-04-21    276.28    277.25   265.43     268.37    45247900
```

```
getSymbols("GDP", src="FRED")
```

```
## [1] "GDP"
```

```
first(GDP, 5)
```

```
##                GDP
## 1947-01-01 243.164
## 1947-04-01 245.968
## 1947-07-01 249.585
## 1947-10-01 259.745
## 1948-01-01 265.742
```

Use Quandl()

```
library(Quandl)
dgs10 <- Quandl::Quandl(code = "FRED/DGS10", type = "xts")
first(dgs10, 5)
```

```
##            [,1]
## 1962-01-02 4.06
## 1962-01-03 4.03
## 1962-01-04 3.99
## 1962-01-05 4.02
## 1962-01-08 4.03
```

Get currency from Oanda

```
# Get available currency in Oanda
head(quantmod::oanda.currencies)
```

```
##     oanda.df.1.length.oanda.df...2....1.
## USD                            US Dollar
## AFN                  Afghanistan Afghani
```

```
## ALL                          Albanian Lek
## DZD                        Algerian Dinar
## ADF                        Andorran Franc
## ADP                       Andorran Peseta
```

```
# Create a currency_pair object
currency_pair <- "GBP/CAD"

# Load British Pound to Canadian Dollar exchange rate data
getSymbols(currency_pair, src = "oanda")
```

```
## [1] "GBP/CAD"
```

```
# Examine object using str()
str(GBPCAD)
```

```
## An 'xts' object on 2020-03-09/2020-09-03 containing:
##   Data: num [1:179, 1] 1.79 1.78 1.77 1.76 1.73 ...
##  - attr(*, "dimnames")=List of 2
##   ..$ : NULL
##   ..$ : chr "GBP.CAD"
##   Indexed by objects of class: [Date] TZ: UTC
##   xts Attributes:
## List of 2
##  $ src    : chr "oanda"
##  $ updated: POSIXct[1:1], format: "2020-09-04 09:45:09"
```

```
# Try to load data from 190 days ago
getSymbols(currency_pair, from = Sys.Date() - 190, to = Sys.Date(), src = "oanda")
```

```
## Warning in doTryCatch(return(expr), name, parentenv, handler): Oanda only
## provides historical data for the past 180 days. Symbol: GBP/CAD
```

```
## [1] "GBP/CAD"
```

Unemployment Rate from FRED

```
# Create a series_name object
series_name <- "UNRATE"

# Load the data using getSymbols
getSymbols(series_name, src = "FRED")
```

```
## [1] "UNRATE"
```

```
tail(UNRATE)
```

```
##            UNRATE
## 2020-03-01    4.4
## 2020-04-01   14.7
## 2020-05-01   13.3
## 2020-06-01   11.1
## 2020-07-01   10.2
## 2020-08-01    8.4
```

```r
# Create a quandl_code object
quandl_code <- "FRED/UNRATE"

# Load the data using Quandl
unemploy_rate <- Quandl(quandl_code)
head(unemploy_rate)
```

```
##         Date Value
## 1 2020-07-01  10.2
## 2 2020-06-01  11.1
## 3 2020-05-01  13.3
## 4 2020-04-01  14.7
## 5 2020-03-01   4.4
## 6 2020-02-01   3.5
```

Extract OHLC