share_analysis

Fundamental and Technical Analysis of Shares

Original Source

Explore possibilities for fundamental and technical analysis of stocks offered by the **quantmod** package.

```
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
```

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

Exercise 1

Load FB (Facebook) market data from Yahoo and assign it to an xts object fb.p.

```
fb.p <- getSymbols("FB", env=NULL)
```

```
## '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.
```

```
##
## WARNING: There have been significant changes to Yahoo Finance data.
## Please see the Warning section of '?getSymbols.yahoo' for details.
##
## This message is shown once per session and may be disabled by setting
## options("getSymbols.yahoo.warning"=FALSE).
```

Exercise 2

Display monthly closing prices of Facebook in 2015.

```
Cl(to.monthly(fb.p["2015::2015-12-31"]))
```

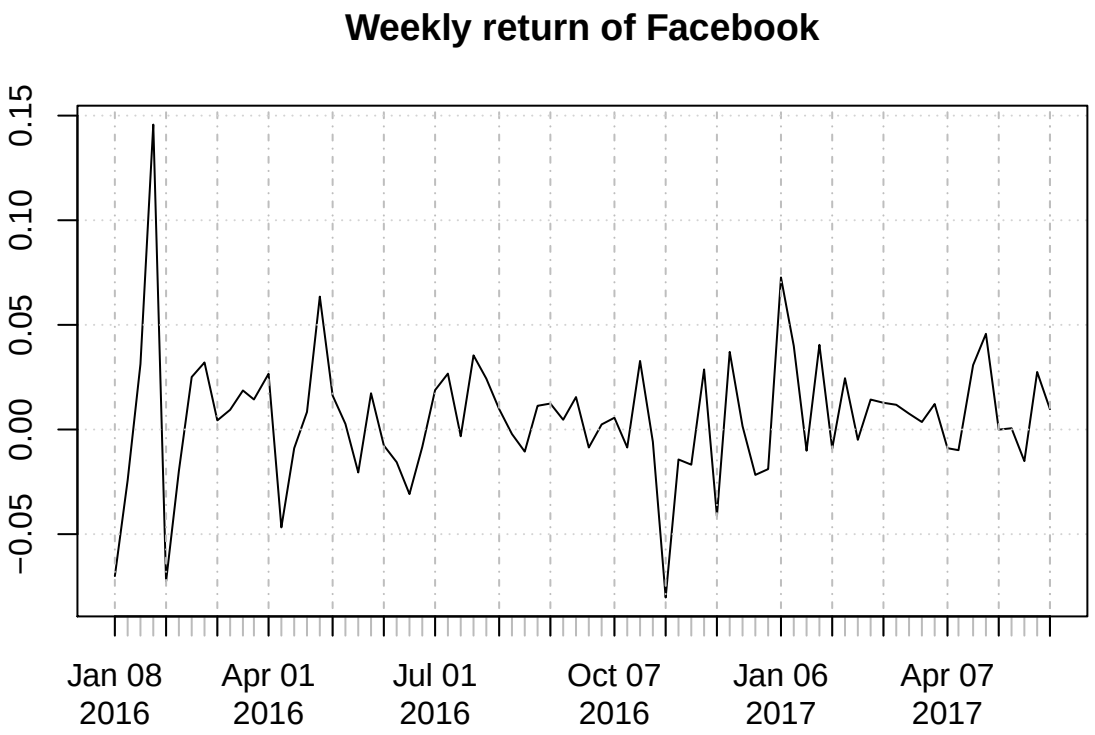
```
## Warning: timezone of object (UTC) is different than current timezone ().
```

```
##          fb.p["2015::2015-12-31"].Close
## Jan 2015                          75.91
## Feb 2015                          78.97
## Mar 2015                          82.22
## Apr 2015                          78.77
## May 2015                          79.19
## Jun 2015                          85.77
## Jul 2015                          94.01
## Aug 2015                          89.43
## Sep 2015                          89.90
## Oct 2015                         101.97
## Nov 2015                         104.24
## Dec 2015                         104.66
```

Exercise 3

Plot weekly returns of FB in 2016.

```
plot(weeklyReturn(fb.p, subset="2016::"), main="Weekly return of Facebook")
```



Exercise 4

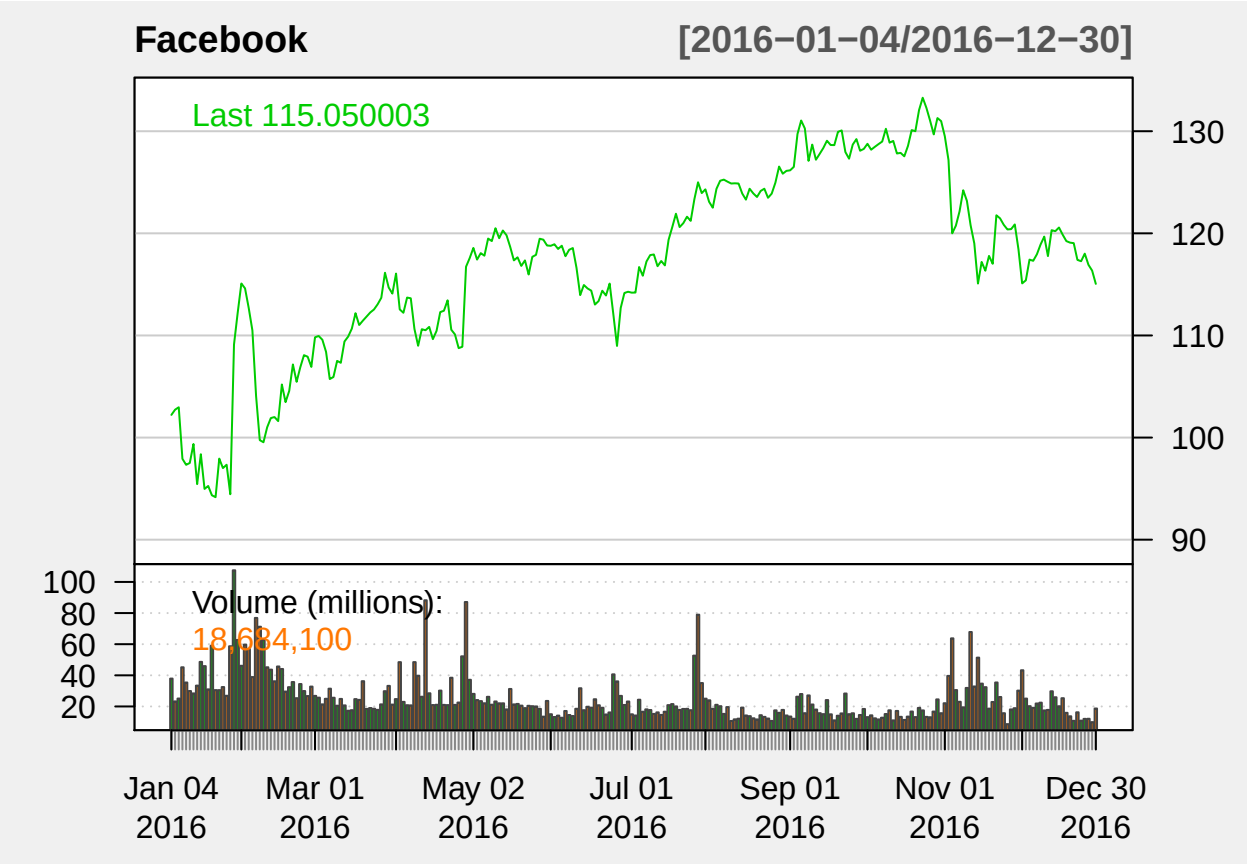
Plot a candlestick chart of FB in 2016.

```
candleChart(fb.p, subset="2016::2016-12-31", name="Facebook", theme="white")
```

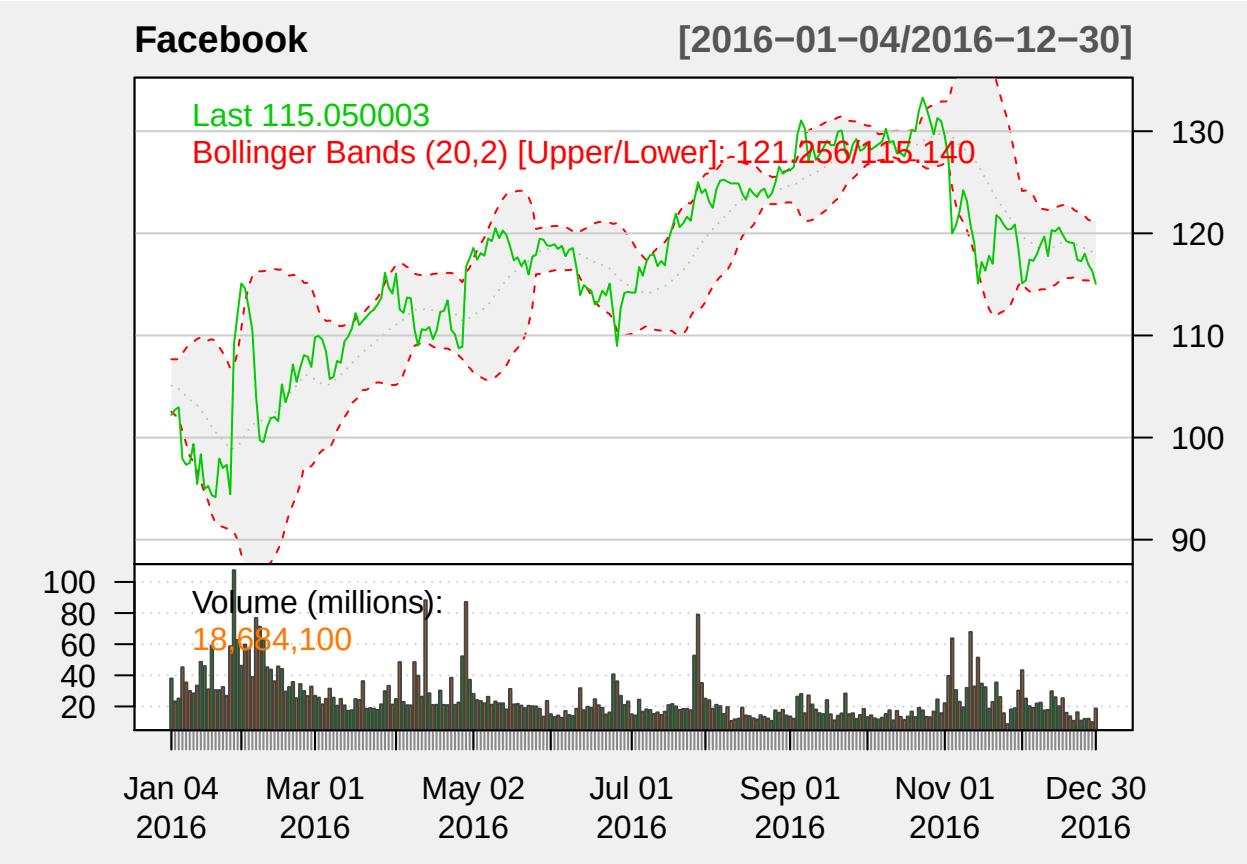
Exercise 5

Plot a line chart of FB in 2016., and add boilinger bands and a Relative Strength index to the chart.

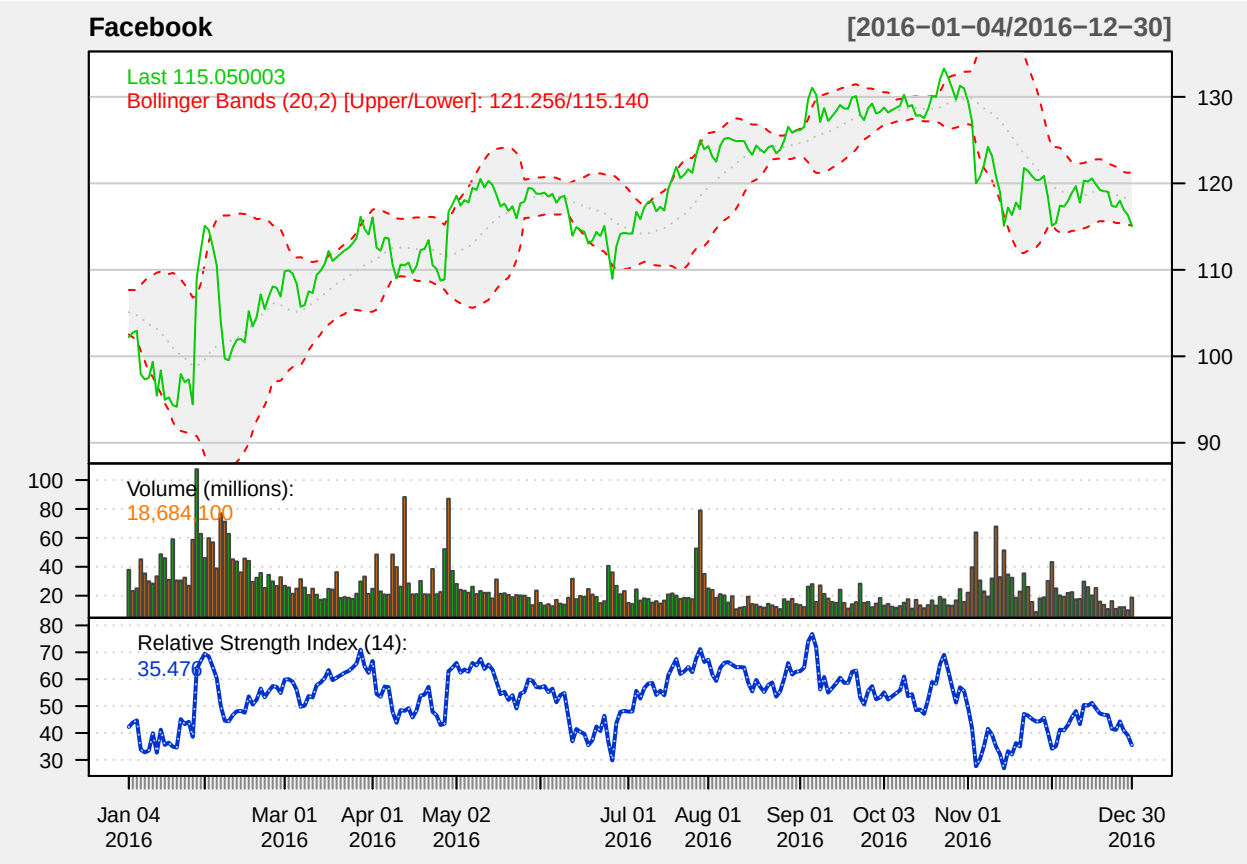
```
chartSeries(fb.p, subset="2016::2016-12-31", type="line", name="Facebook", theme="white")
```


Facebook
[2016−01−04/2016−12−30]
Last 115.050003
130
120
110
100
90
100
80
60
40
20
Volume (millions):
18,684,100
Jan 04
2016
Mar 01
2016
May 02
2016
Jul 01
2016
Sep 01
2016
Nov 01
2016
Dec 30
2016

```
addBBands()
```


Facebook
[2016−01−04/2016−12−30]
Last 115.050003
Bollinger Bands (20,2) [Upper/Lower]: 121.256/115.140
130
120
110
100
90
100
80
60
40
20
Volume (millions):
18,684,100
Jan 04
2016
Mar 01
2016
May 02
2016
Jul 01
2016
Sep 01
2016
Nov 01
2016
Dec 30
2016

```
addRSI()
```



Exercise 6

Get yesterday's EUR/USD rate.

```
getFX("EUR/USD", from=Sys.Date()-1, env=NULL)
```

```
##              EUR.USD
## 2017-06-04 1.128265
```

Exercise 7

Get financial data for FB and display it.

```
fb.f <- getFin("FB", env=NULL)
viewFin(fb.f)
```

```
## Annual Balance Sheet for FB
```

	2016-12-31	2015-12-31
Cash & Equivalents	5409	2409
Short Term Investments	22676	14322
Cash and Short Term Investments	29449	18434
Accounts Receivable - Trade, Net	3993	2559
Receivables - Other	NA	NA
Total Receivables, Net	3993	2559
Total Inventory	NA	NA

```
## Prepaid Expenses                                    959        659
## Other Current Assets, Total                          NA         NA
## Total Current Assets                              34401      21652
## Property/Plant/Equipment, Total - Gross           11803       7819
## Accumulated Depreciation, Total                   -3212      -2132
## Goodwill, Net                                     18122      18026
## Intangibles, Net                                   2535       3246
## Long Term Investments                                NA         NA
## Other Long Term Assets, Total                      1312        796
## Total Assets                                      64961      49407
## Accounts Payable                                    582        413
## Accrued Expenses                                   2203       1248
## Notes Payable/Short Term Debt                         0        201
## Current Port. of LT Debt/Capital Leases               0          7
## Other Current liabilities, Total                     90         56
## Total Current Liabilities                          2875       1925
## Long Term Debt                                       NA         NA
## Capital Lease Obligations                             0        107
## Total Long Term Debt                                  0        107
## Total Debt                                            0        315
## Deferred Income Tax                                  NA        163
## Minority Interest                                    NA         NA
## Other Liabilities, Total                           2892       2994
## Total Liabilities                                  5767       5189
## Redeemable Preferred Stock, Total                    NA         NA
## Preferred Stock - Non Redeemable, Net                NA         NA
## Common Stock, Total                                   0          0
## Additional Paid-In Capital                        38227      34886
## Retained Earnings (Accumulated Deficit)           21670       9787
## Treasury Stock - Common                              NA         NA
## Other Equity, Total                                -582       -430
## Total Equity                                      59194      44218
## Total Liabilities & Shareholders&#39; Equity      64961      49407
## Shares Outs - Common Stock Primary Issue             NA         NA
## Total Common Shares Outstanding                    2892       2845
##                                                2014-12-31 2013-12-31
## Cash & Equivalents                                 2153       2279
## Short Term Investments                             6884       8126
## Cash and Short Term Investments                   11199      11449
## Accounts Receivable - Trade, Net                   1678       1109
## Receivables - Other                                  NA         NA
## Total Receivables, Net                             1678       1109
## Total Inventory                                      NA         NA
## Prepaid Expenses                                    513        512
## Other Current Assets, Total                          NA         NA
## Total Current Assets                               13390      13070
## Property/Plant/Equipment, Total - Gross            5784       4142
## Accumulated Depreciation, Total                   -1817      -1260
## Goodwill, Net                                     17981        839
## Intangibles, Net                                   3929        883
## Long Term Investments                                NA         NA
## Other Long Term Assets, Total                       699        221
## Total Assets                                       39966      17895
## Accounts Payable                                     378        268
```

```
## Accrued Expenses                                    866        555
## Notes Payable/Short Term Debt                         0          0
## Current Port. of LT Debt/Capital Leases             114        239
## Other Current liabilities, Total                     66         38
## Total Current Liabilities                          1424       1100
## Long Term Debt                                       NA         NA
## Capital Lease Obligations                           119        237
## Total Long Term Debt                                119        237
## Total Debt                                          233        476
## Deferred Income Tax                                 769         NA
## Minority Interest                                    NA         NA
## Other Liabilities, Total                           1558       1088
## Total Liabilities                                  3870       2425
## Redeemable Preferred Stock, Total                    NA         NA
## Preferred Stock - Non Redeemable, Net                NA         NA
## Common Stock, Total                                   0          0
## Additional Paid-In Capital                        30225      12297
## Retained Earnings (Accumulated Deficit)            6099       3159
## Treasury Stock - Common                              NA         NA
## Other Equity, Total                                -227         12
## Total Equity                                      36096      15470
## Total Liabilities & Shareholders&#39; Equity      39966      17895
## Shares Outs - Common Stock Primary Issue             NA         NA
## Total Common Shares Outstanding                    2797       2547
## attr(,"col_desc")
## [1] "As of 2016-12-31" "As of 2015-12-31" "As of 2014-12-31"
## [4] "As of 2013-12-31"
```

Exercise 8

Calculate the current ratio for FB for years 2013, 2014 and 2015. (Tip: You can calculate the current ratio when you divide current assets with current liabilities from the balance sheet.)

```
fb.bs <- viewFin(fb.f, "BS", "A")
```

```
## Annual Balance Sheet for FB
```

```
fb.bs["Total Current Assets", c("2013-12-31", "2014-12-31", "2015-12-31")] / fb.bs["Total Current Liabi
```

```
## 2013-12-31 2014-12-31 2015-12-31
##   11.88182    9.40309   11.24779
```

Exercise 9

Based on the last closing price and income statement for 12 months ending on December 31th 2015, Calculate the PE ratio for FB. (Tip: PE stands for Price/Earnings ratio. You calculate it as stock price divided by diluted normalized EPS read from income statement.)

```
price <- Cl(fb.p[NROW(fb.p)])
fb.is <- viewFin(fb.f, "IS", "a")
```

```
## Annual Income Statement for FB
```

```
EPS <- fb.is["Diluted Normalized EPS", "2015-12-31"]

price / EPS
```

```
##            FB.Close
## 2017-06-02 119.0775
```

Exercise 10

write a function getROA(symbol, year) which will calculate return on asset for given stock symbol and year. What is the ROI for FB in 2014. (Tip: ROA stands for Return on asset. You calculate it as net income divided by total asset.)

```
getROA <- function(symbol, year) {
  symbol.f <- getFin(symbol, env=NULL)
  symbol.ni <- viewFin(symbol.f, "IS", "A")["Net Income", paste(year, sep="", "-12-31")]
  symbol.ta <- viewFin(symbol.f, "BS", "A")["Total Assets", paste(year, sep="", "-12-31")]
  symbol.ni / symbol.ta * 100
}

getROA("FB", 2014)
```

```
## Annual Income Statement for FB

## Annual Balance Sheet for FB

## [1] 7.356253
```