

Ve406 R lab/workshop 3: Bonus Task

Dr. Tong Zhu

UM-SJTU Joint Institute

Nov 24, 2020

1M Consider the following R code, and compare the output with the webpage,

```
> library(rvest) # You may need to install it
>
> link = "http://www.forecasts.org/"
> page = read_html(link)
> table = html_table(page, fill = TRUE)
>
> table
```

manipulate table to create two data.frames for the tables on the webpage

forecast_summary.df	current_economic_indicators.df
Indicator	Indicator
Current	Value
Forecast11	
Forecast12	

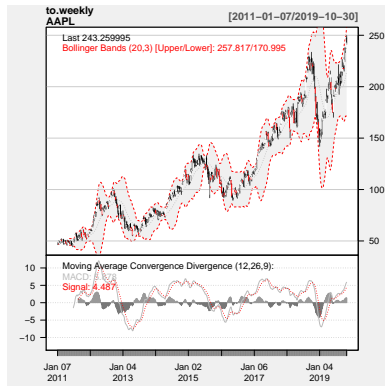
with the corresponding columns, respectively.

1M Consider and explain what the last 5 lines of the following R code do.

```
> library(pdftools) # You may need to install it
> working.directory = getwd()
> appleQ42019.pdf = paste(sep = "",
+   working.directory,
+   "/Q4-FY19-Consolidated-Financial-Statements.pdf")
>
> txt = pdf_text(pdf = appleQ42019.pdf)
> page = txt[3]
> rows = scan(textConnection(page),
+   what = "character", sep = "\n")
> #####It is about the five lines below#####
> dat = unlist(strsplit(rows, " \\s+ "))
> dat = gsub("[\\$,]", "", dat)
> dat = gsub("^\\((( [0-9]+ )\\) )$", "-\\1", dat)
> dat = dat[!(dat %in% c(""))]
> dat[!grepl("[a-zA-Z0-9-]", dat)] =
+   c("(In millions)", "0")
```

1M Consider the following R code, inspect the plots below, then reproduce them.

```
> library(quantmod) # You may need to install it
> getSymbols("AAPL",src="yahoo",from = "2019-07-01",
+           to = "2019-10-31") # from yahoo finance
```



you may find functions `candleChart` and `chartSeries` in `quantmod` useful.

- Federal Reserve Economic Data (FRED)

<https://fred.stlouisfed.org>

is my favourite place when comes to financial data.

1M Use R to scrape the Total Vehicle Sales data from FRED.

- You have seen the function `arima` in class, in general it can be used to build

a model consists of autoregressive and moving average components,

which is known as an **autoregressive integrated moving average model**.

- Another kind of standard time series models can be constructed using

```
> library(rugarch)
```

They are the **generalised autoregressive conditional heteroskedasticity models**

1M Study the package, and construct a simple GARCH (1,1) model on Apple.