Quantitative Methods for Finance

2025 Marina Dolfin

QMF1_1_Data_Analysys

Use of Import and Plot Tools

This activity introduces the basic workflow of MATLAB in a financial context. You will learn how to:

- Import financial data from Excel
- Plot stock prices over time
- Compute simple returns
- Visualize and save your results

Step 1: Collect the spreadsheet **`Data.xlsx` into the Current Folder**

Instruction:

Place the file `Data.xlsx` in your MATLAB Current Folder.

Solution:

Download the Excel file `Prices.xlsx` from the repository and save it into the Current Folder of MATLAB.

Step 2 (option 1): Use the Import Tool to import the dataset as column vectors

Instruction:

Import the entire dataset as column vectors.

Solution:

- Double-click the file in the Current Folder (or right-click → *Import Data*).
- In the Import Tool, set the output type to **Column Vectors**.
- Click **Import Selection**.

Step 2 (option 2):

```
% Set up the Import Options and import the data
opts = spreadsheetImportOptions("NumVariables", 13);

% Specify sheet and range
```

```
opts.Sheet = "Sheet1";
opts.DataRange = "A2:M166";

% Specify column names and types
opts.VariableNames = ["Date", "AAPL", "MSFT", "NVDA", "GOOGL", "GOOG", "JPM", "GS",
"HSBC", "KO", "PG", "XOM", "SHEL"];
opts.VariableTypes = ["datetime", "double", "double", "double", "double", "double",
"double", "double", "double", "double", "double", "double", "double"];

% Import the data
Data2 = readtable("C:\Users\mdolf\OneDrive\Documents\Didattica
2026\MATLAB\Codes\Data\Data.xlsx", opts, "UseExcel", false);

% Convert to output type
Date2 = Data2.Date;
AAPL2 = Data2.AAPL;
MSFT = Data2.MSFT;
NVDA = Data2.NVDA;
GOOGL = Data2.GOOGL;
GOOG = Data2.GOOG;
JPM = Data2.JPM;
GS = Data2.GS;
HSBC = Data2.HSBC;
KO = Data2.KO;
PG = Data2.PG;
XOM = Data2.XOM;
SHEL = Data2.SHEL;

% Clear temporary variables
clear Data2
```

Step 3: Plot Apple prices against the dates

(Use the names of the variable that you imported; it depends if you used Step 2(option1) or Step 2(option2). In the example it has been applied Step 2 (option 2)

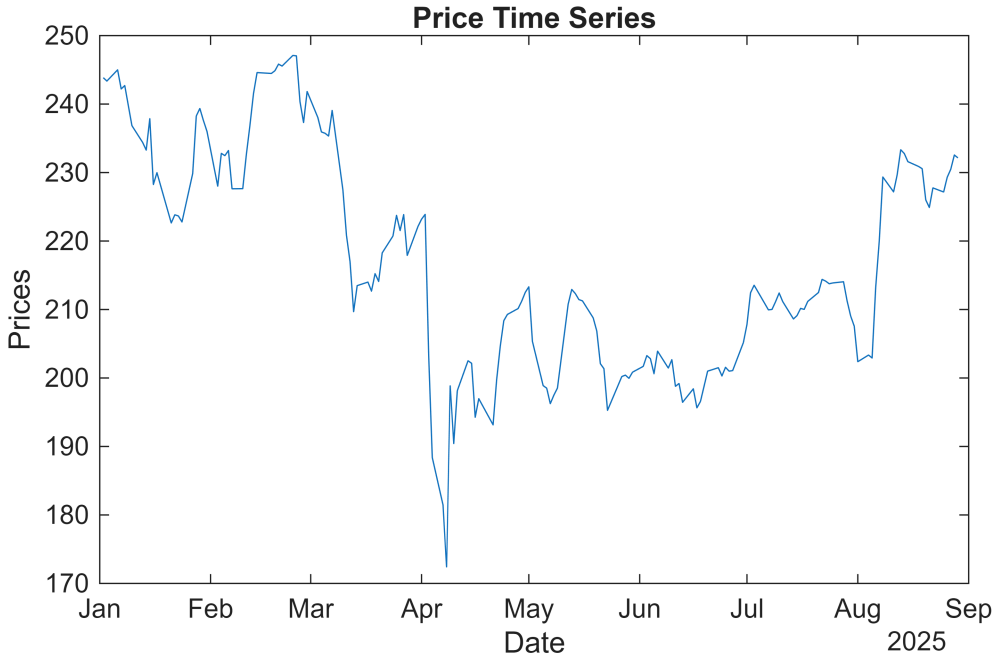
Instruction:

Plot Apple stock prices against time.

Solution:

```
stock = AAPL2;

plot(Date2, stock)
xlabel('Date'); ylabel('Prices');
title('Price Time Series')
```



Step 4: Compute Apple logarithmic returns

Instruction:

Compute Apple logarithmic returns and store them in a variable `returns`.

Solution:

```
returns = tick2ret(stock);
```

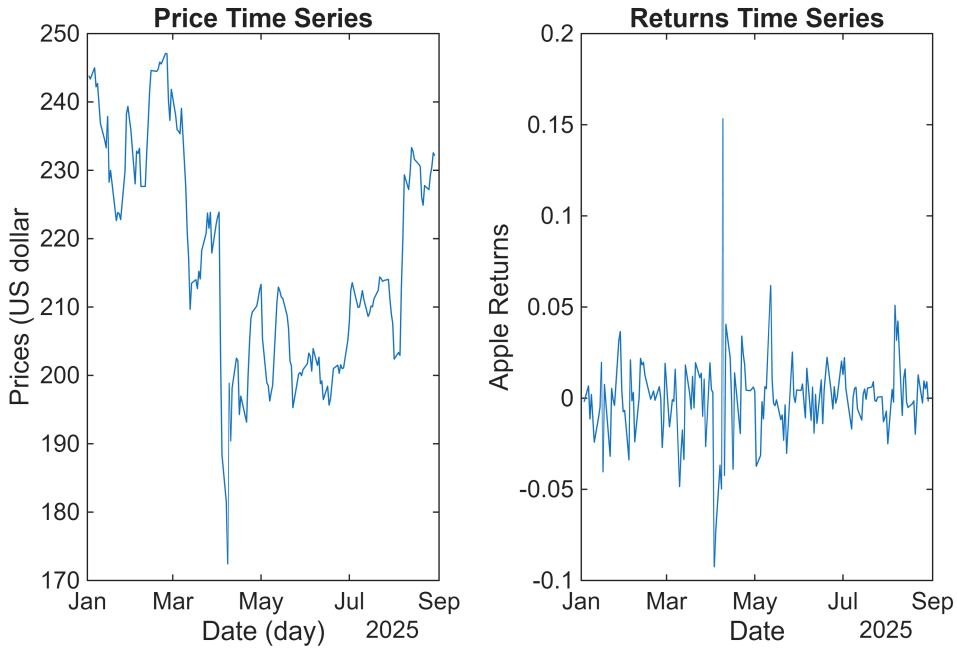
Step 5: Visualize both prices and returns

Instruction:

Use subplots to display prices and returns in the same figure.

Solution:

```
subplot(1,2,1)
plot(Date2, stock)
xlabel('Date (day)'); ylabel('Prices (US dollar');
title('Price Time Series')
subplot(1,2,2)
plot(Date2(2:end), returns)
xlabel('Date'); ylabel('Apple Returns');
title('Returns Time Series')
```



Step 6: Save the figure

Instruction:

Save the graph as a MATLAB figure named `exerciseI.fig`.

Solution:

In the figure window, go to **File** → **Save As** and save as `exerciseI.fig`.

Completed!

```
disp('Activity I Completed!')
```

```
Activity I Completed!
```