

```
import pandas as pd

import datetime

import numpy as np

import matplotlib.pyplot as plt

from pandas.plotting import scatter_matrix

!pip install yfinance

import yfinance as yf

%matplotlib inline
```

Collecting yfinance

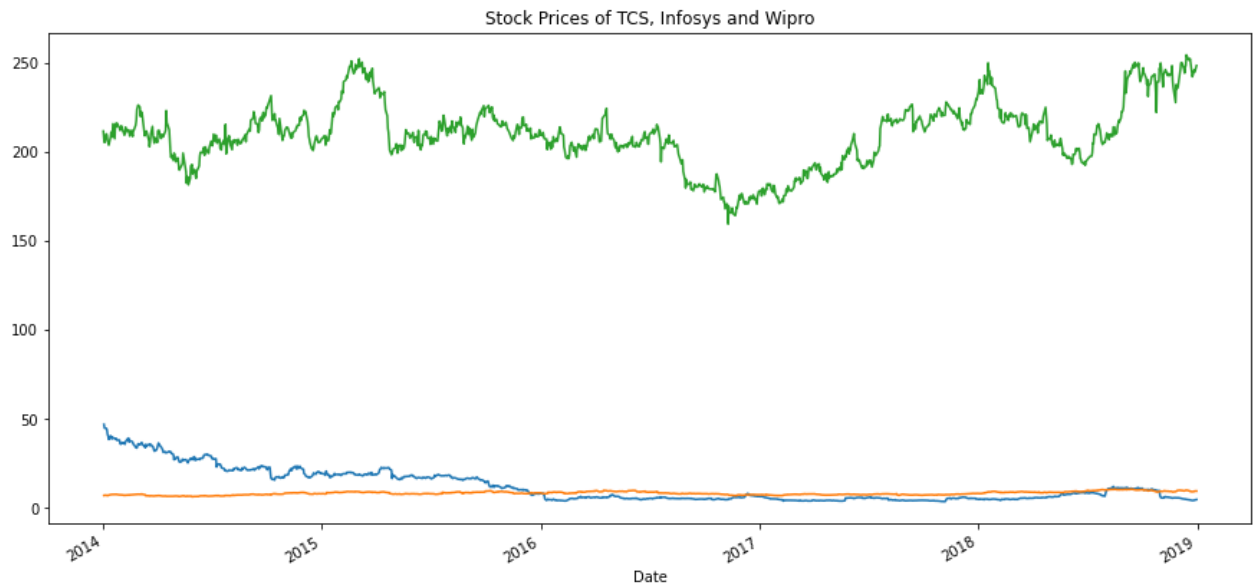
```
Downloading yfinance-0.1.67-py2.py3-none-any.whl (25 kB)
Requirement already satisfied: requests>=2.20 in /usr/local/lib/python3.7/dist-packages
Requirement already satisfied: numpy>=1.15 in /usr/local/lib/python3.7/dist-packages
Requirement already satisfied: pandas>=0.24 in /usr/local/lib/python3.7/dist-packages
Collecting lxml>=4.5.1
  Downloading lxml-4.6.4-cp37-cp37m-manylinux_2_17_x86_64.manylinux2014_x86_64.manyli
  | 6.3 MB 6.4 MB/s
Requirement already satisfied: multitasking>=0.0.7 in /usr/local/lib/python3.7/dist-p
Requirement already satisfied: pytz>=2017.2 in /usr/local/lib/python3.7/dist-packages
Requirement already satisfied: python-dateutil>=2.7.3 in /usr/local/lib/python3.7/dis
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.7/dist-packages (fr
Requirement already satisfied: chardet<4,>=3.0.2 in /usr/local/lib/python3.7/dist-pac
Requirement already satisfied: urllib3!=1.25.0,!1.25.1,<1.26,>=1.21.1 in /usr/local/
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.7/dist-pa
Requirement already satisfied: idna<3,>=2.5 in /usr/local/lib/python3.7/dist-packages
Installing collected packages: lxml, yfinance
  Attempting uninstall: lxml
    Found existing installation: lxml 4.2.6
    Uninstalling lxml-4.2.6:
      Successfully uninstalled lxml-4.2.6
Successfully installed lxml-4.6.4 yfinance-0.1.67
```

```
start = "2014-01-01"
end = '2019-1-01'
tcs = yf.download('TCS',start,end)
infy = yf.download('INFY',start,end)
wipro = yf.download('WIPRO.NS',start,end)
```

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[*****100%*****] 1 of 1 completed
[*****100%*****] 1 of 1 completed
```

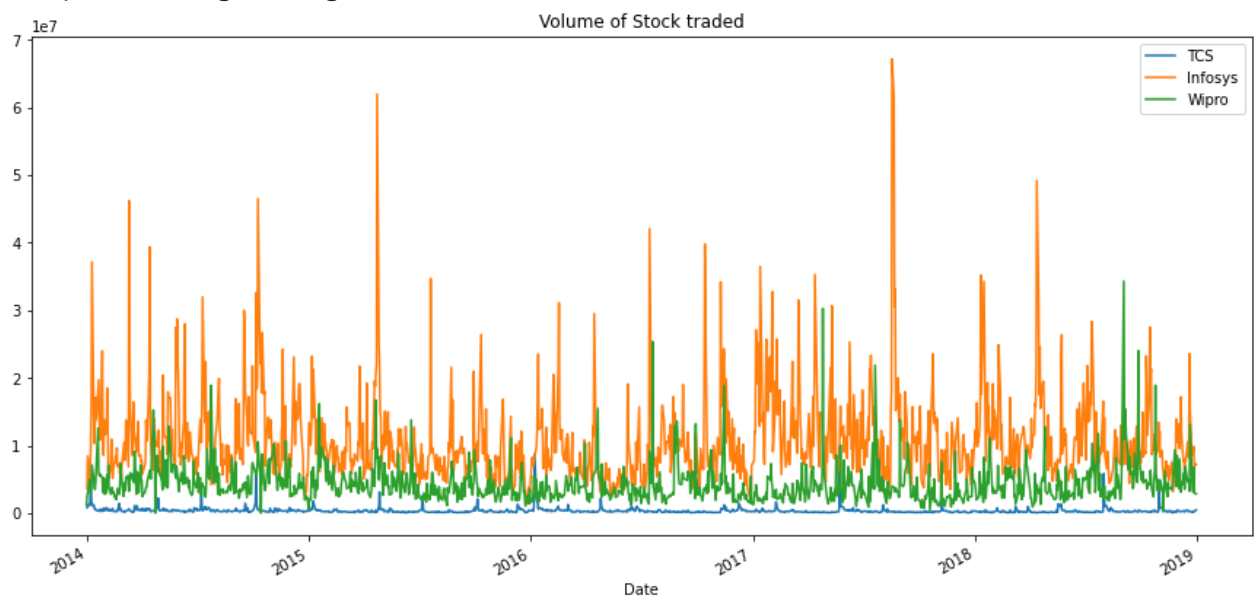
```
tcs['Open'].plot(label = 'TCS', figsize = (15,7))
infy['Open'].plot(label = "Infosys")
wipro['Open'].plot(label = 'Wipro')
plt.title('Stock Prices of TCS, Infosys and Wipro')
```

Text(0.5, 1.0, 'Stock Prices of TCS, Infosys and Wipro')



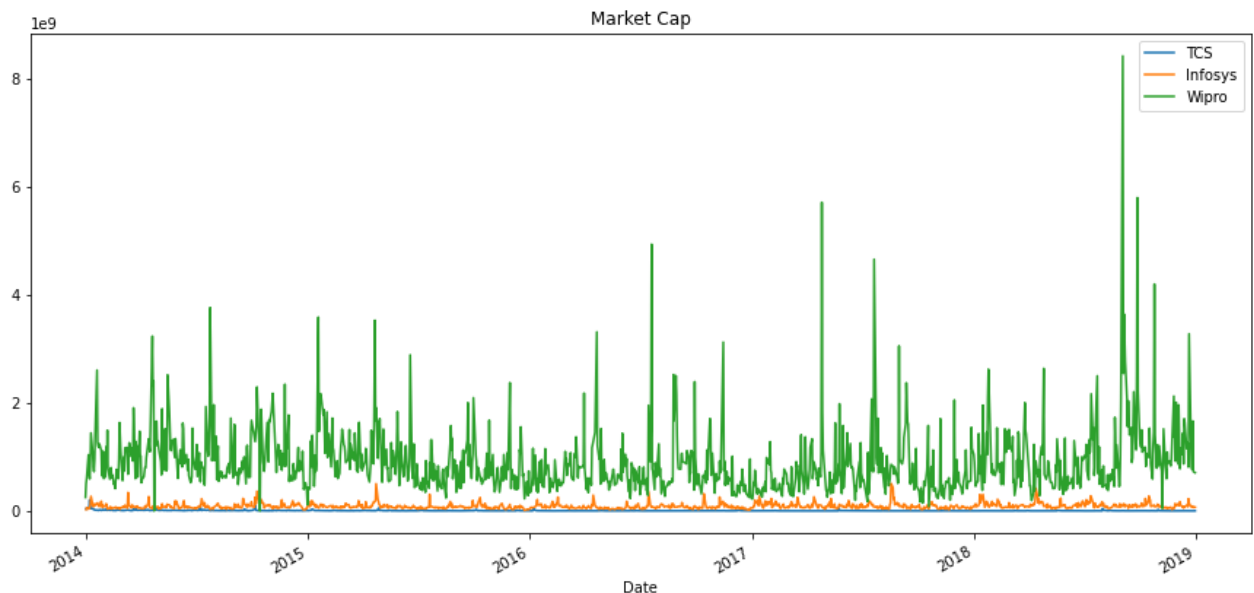
```
tcs['Volume'].plot(label = 'TCS', figsize = (15,7))
infy['Volume'].plot(label = "Infosys")
wipro['Volume'].plot(label = 'Wipro')
plt.title('Volume of Stock traded')
plt.legend()
```

<matplotlib.legend.Legend at 0x7f3934f9e410>



```
#Market Capitalisation
tcs['MarktCap'] = tcs['Open'] * tcs['Volume']
infy['MarktCap'] = infy['Open'] * infy['Volume']
wipro['MarktCap'] = wipro['Open'] * wipro['Volume']
tcs['MarktCap'].plot(label = 'TCS', figsize = (15,7))
infy['MarktCap'].plot(label = 'Infosys')
wipro['MarktCap'].plot(label = 'Wipro')
plt.title('Market Cap')
plt.legend()
```

<matplotlib.legend.Legend at 0x7f3933210b10>



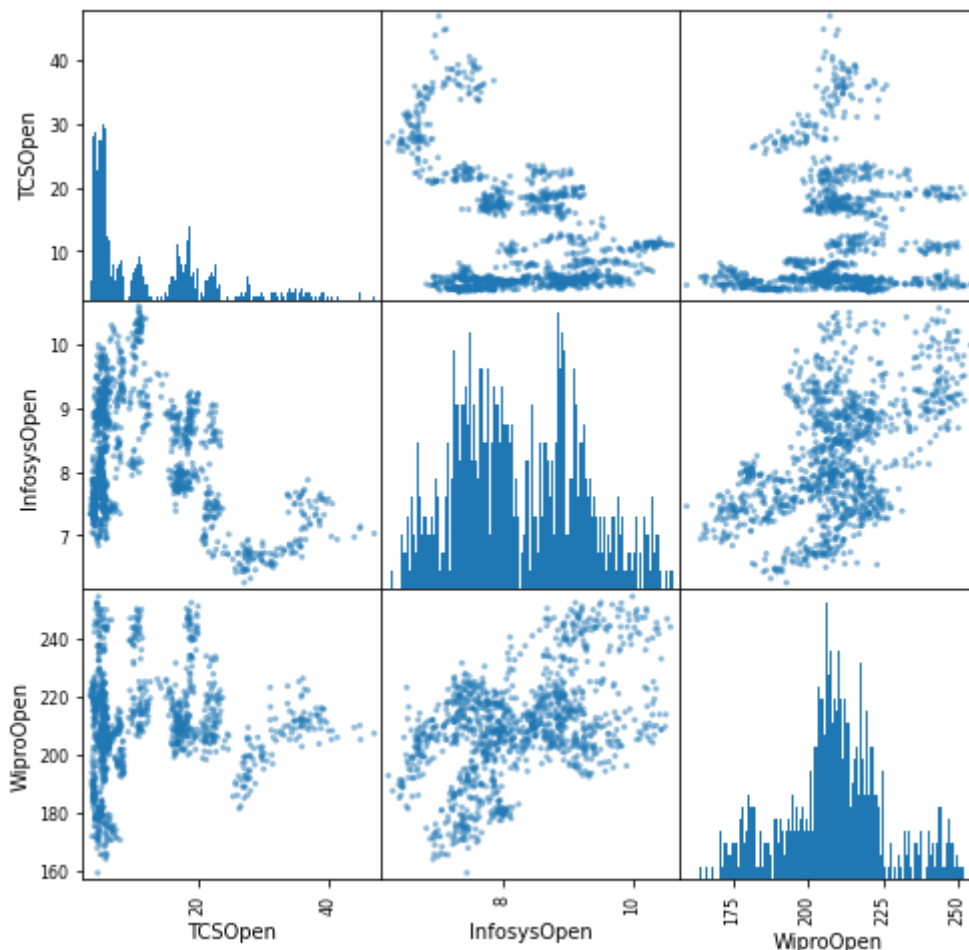
```
tcs['MA50'] = tcs['Open'].rolling(50).mean()
tcs['MA200'] = tcs['Open'].rolling(200).mean()
tcs['Open'].plot(figsize = (15,7))
tcs['MA50'].plot()
tcs['MA200'].plot()
```

<matplotlib.axes._subplots.AxesSubplot at 0x7f393213c3d0>



```
data = pd.concat([tcs['Open'], infy['Open'], wipro['Open']], axis = 1)
data.columns = ['TCSOpen', 'InfosysOpen', 'WiproOpen']
scatter_matrix(data, figsize = (8,8), hist_kws= {'bins':250})
```

```
array([[<matplotlib.axes._subplots.AxesSubplot object at 0x7f3931fc69d0>,
       <matplotlib.axes._subplots.AxesSubplot object at 0x7f3931f71c50>,
       <matplotlib.axes._subplots.AxesSubplot object at 0x7f3931f34290>],
       [<matplotlib.axes._subplots.AxesSubplot object at 0x7f3931eea890>,
       <matplotlib.axes._subplots.AxesSubplot object at 0x7f3931ea1e90>,
       <matplotlib.axes._subplots.AxesSubplot object at 0x7f3931e644d0>],
       [<matplotlib.axes._subplots.AxesSubplot object at 0x7f3931e19b50>,
       <matplotlib.axes._subplots.AxesSubplot object at 0x7f3931ddd0d0>,
       <matplotlib.axes._subplots.AxesSubplot object at 0x7f3931ddd110>]],
      dtype=object)
```

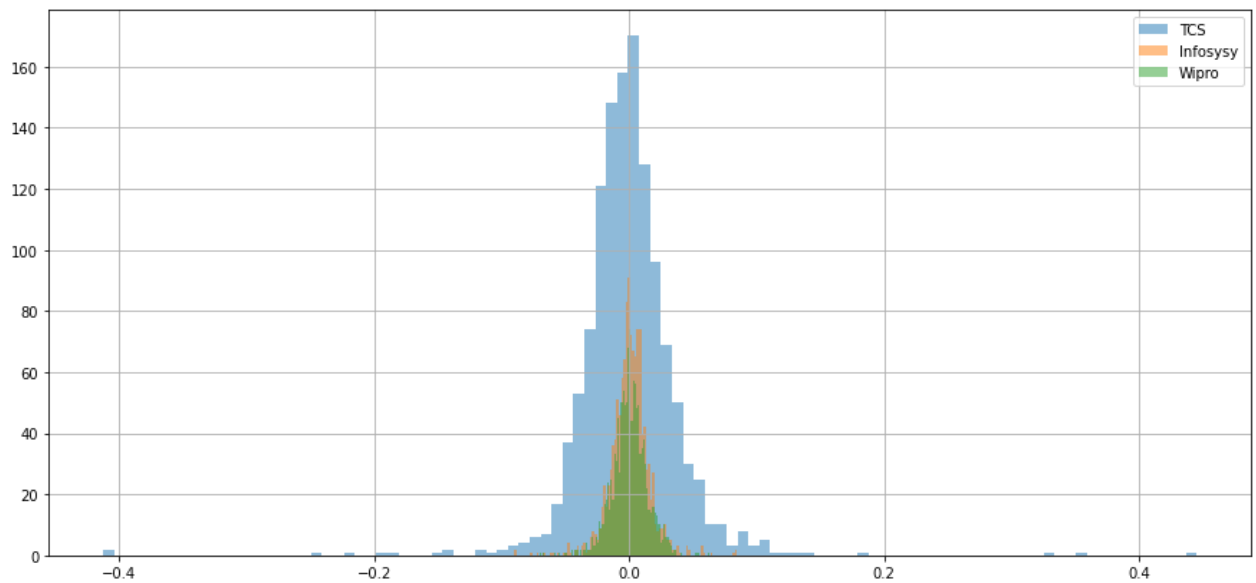


#Volatility

```
tcs['returns'] = (tcs['Close']/tcs['Close'].shift(1)) - 1
infy['returns'] = (infy['Close']/infy['Close'].shift(1)) - 1
wipro['returns'] = (wipro['Close']/wipro['Close'].shift(1)) - 1
tcs['returns'].hist(bins = 100, label = 'TCS', alpha = 0.5, figsize = (15,7))
infy['returns'].hist(bins = 100, label = 'Infosys', alpha = 0.5)
```

```
wipro['returns'].hist(bins = 100, label = 'Wipro', alpha = 0.5)  
plt.legend()
```

<matplotlib.legend.Legend at 0x7f39316f8390>



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