Stock_Linear_Correlation_Analysis

September 29, 2021

1 Stock Linear Correlation Analysis

Correlation is a measure of the strength of linear between 2 or more stocks. However, when 2 stocks is highly correlated, they tend to move in teh same direction.

[1]:
```
# Library
import pandas as pd
import numpy as np
import math

import matplotlib.pyplot as plt
import seaborn as sns

import warnings
warnings.filterwarnings("ignore")

from pandas_datareader import data as pdr
import fix_yahoo_finance as yf
yf.pdr_override()
```

[2]:
```
start = '2016-01-01'
end = '2019-01-01'

market = 'SPY'
symbol1 = 'AAPL'
symbol2 = 'MSFT'
bench = yf.download(market, start=start, end=end)['Adj Close']
stock1 = yf.download(symbol1, start=start, end=end)['Adj Close']
stock2 = yf.download(symbol2, start=start, end=end)['Adj Close']
```

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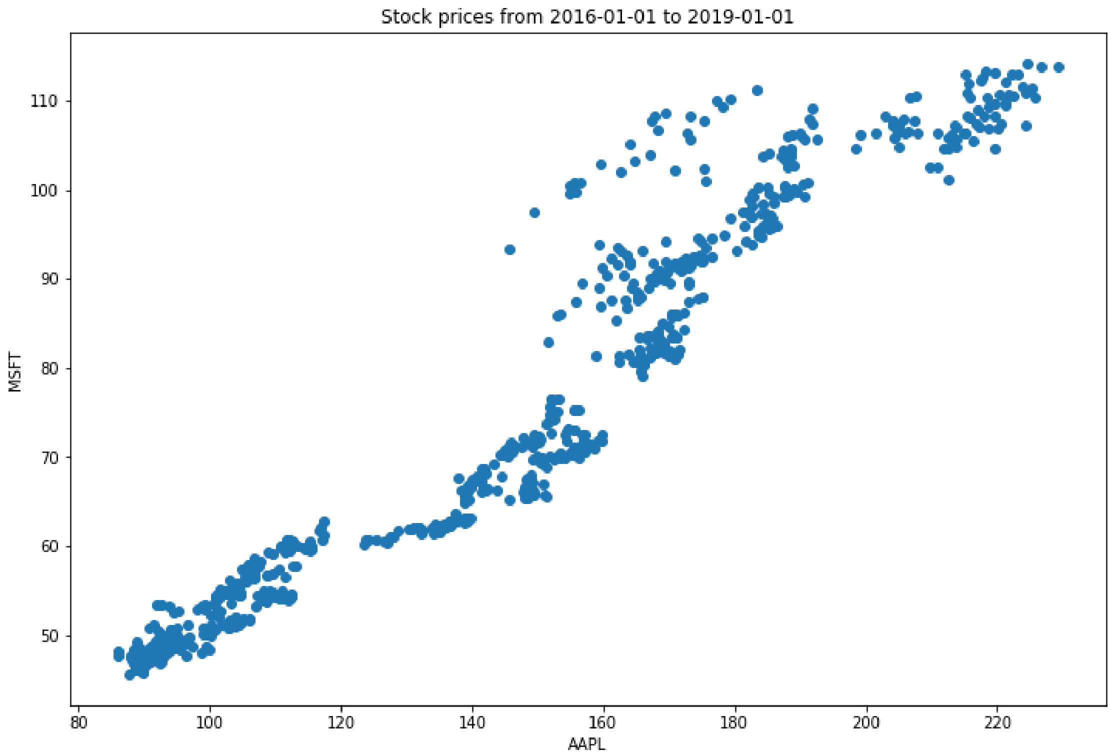
[*********************100%***********************]  1 of 1 downloaded
```

[3]:
```
plt.figure(figsize=(12,8))
plt.scatter(stock1,stock2)
plt.xlabel(symbol1)
plt.ylabel(symbol2)
```

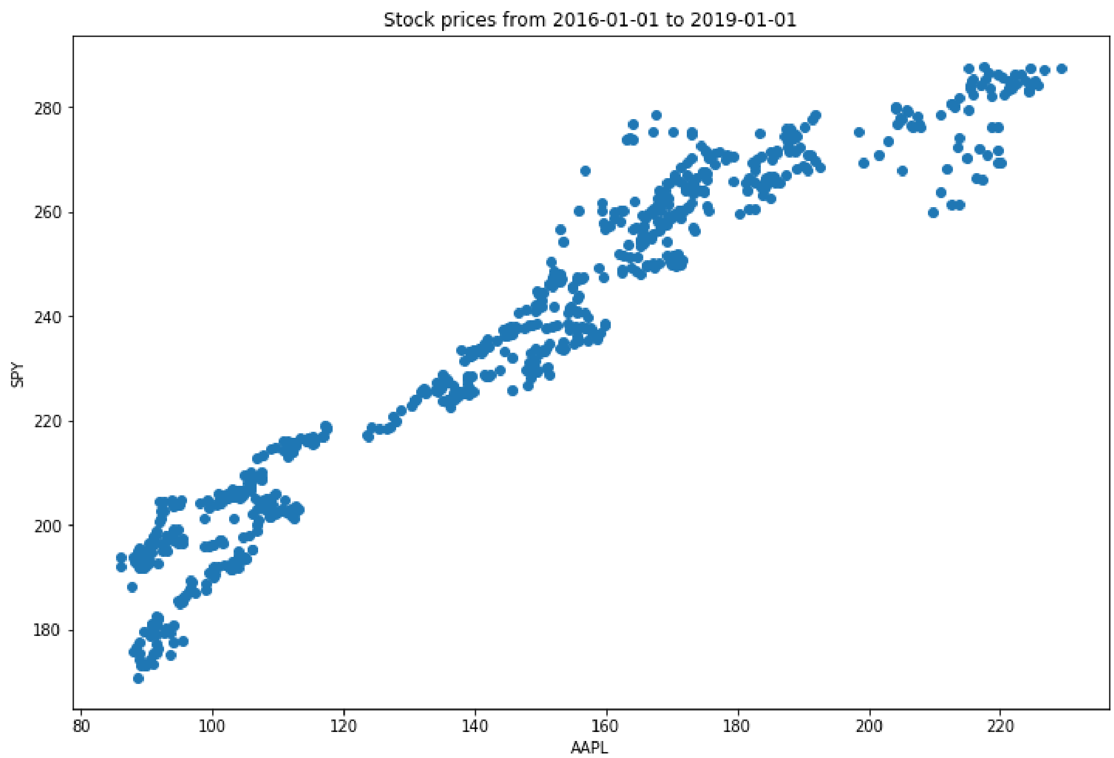
```
plt.title('Stock prices from ' + start + ' to ' + end)
```

[3]: Text(0.5,1,'Stock prices from 2016-01-01 to 2019-01-01')



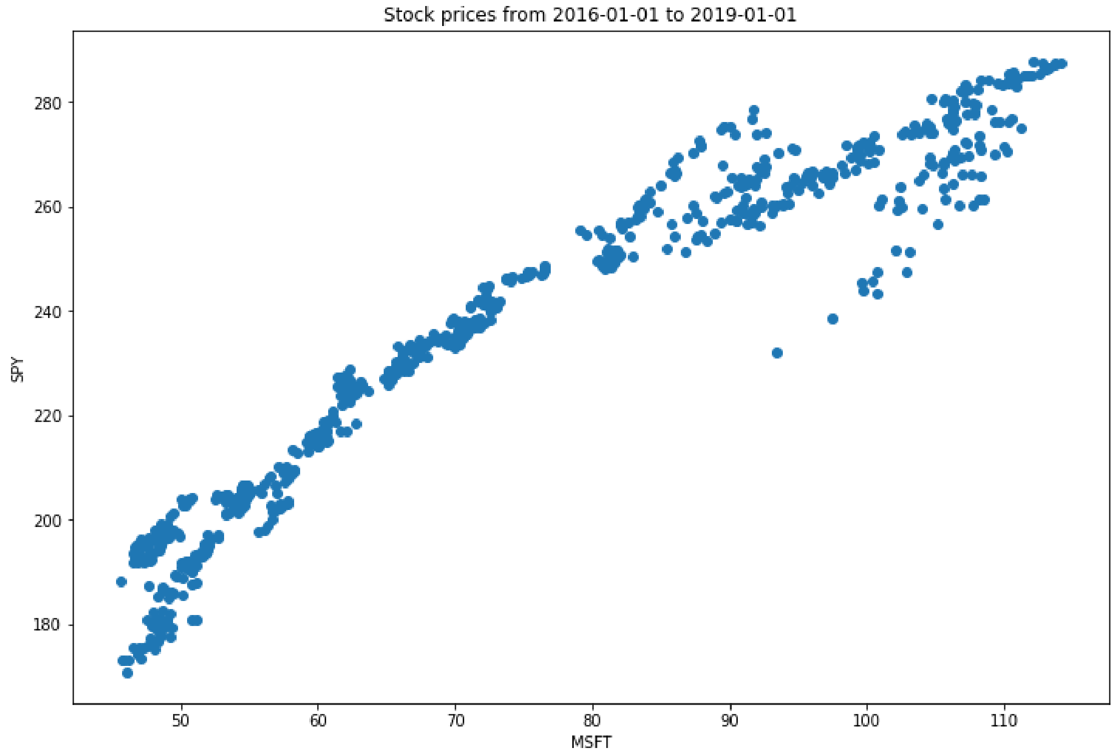

```
[4]: plt.figure(figsize=(12,8))
plt.scatter(stock1,bench)
plt.xlabel(symbol1)
plt.ylabel(market)
plt.title('Stock prices from ' + start + ' to ' + end)
```

[4]: Text(0.5,1,'Stock prices from 2016-01-01 to 2019-01-01')



[5]:
```
plt.figure(figsize=(12,8))
plt.scatter(stock2,bench)
plt.xlabel(symbol2)
plt.ylabel(market)
plt.title('Stock prices from ' + start + ' to ' + end)
```

[5]: Text(0.5,1,'Stock prices from 2016-01-01 to 2019-01-01')

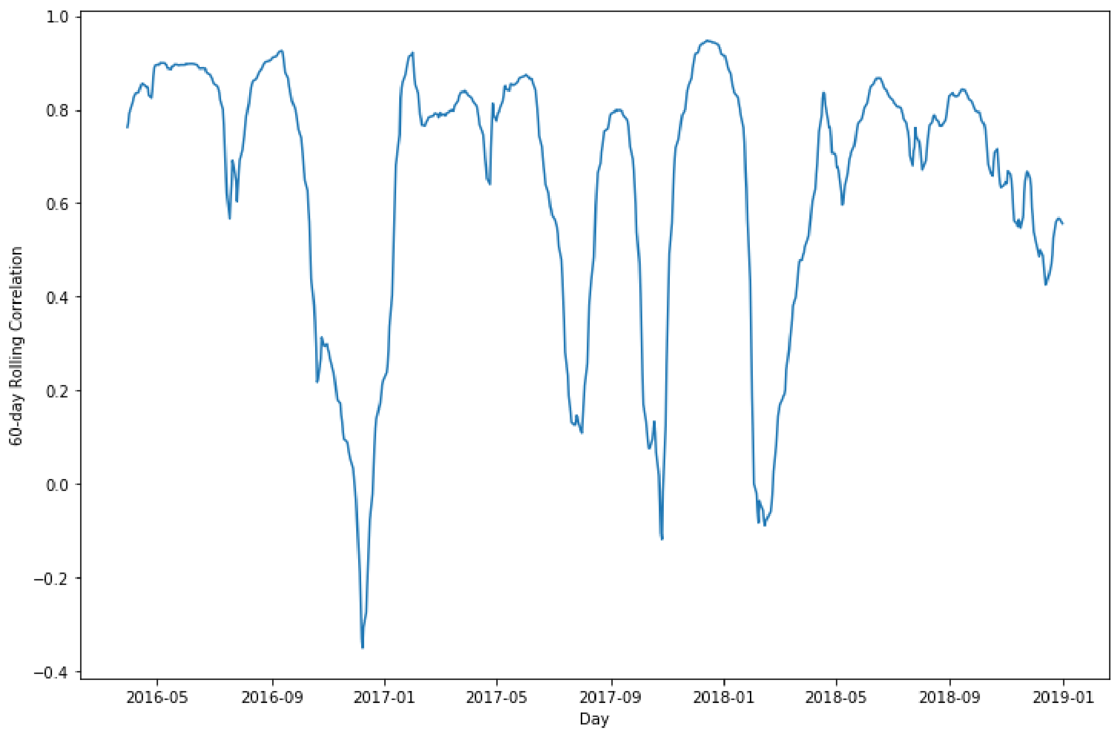



```
[6]: print("Correlation coefficients")
     print(symbol1 + ' and ' + symbol2 + ':', np.corrcoef(stock1,stock2)[0,1])
     print(symbol1 + ' and ' + market + ':', np.corrcoef(stock1,bench)[0,1])
     print(market + ' and ' + symbol2 + ':', np.corrcoef(bench,stock2)[0,1])
```

```
Correlation coefficients
AAPL and MSFT: 0.96002146241
AAPL and SPY: 0.966795270944
SPY and MSFT: 0.958303745726
```

```
[7]: rolling_correlation = stock1.rolling(60).corr(stock2)
     plt.figure(figsize=(12,8))
     plt.plot(rolling_correlation)
     plt.xlabel('Day')
     plt.ylabel('60-day Rolling Correlation')
```

```
[7]: Text(0,0.5,'60-day Rolling Correlation')
```


1.0
0.8
0.6
0.4
0.2
0.0
−0.2
−0.4
60-day Rolling Correlation
2016-05
2016-09
2017-01
2017-05
2017-09
2018-01
2018-05
2018-09
2019-01
Day