TECH MAHINDRA VS TCS

by Bibhash Kalita

[ ]

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
%matplotlib inline
```

[9]

```
import pandas_datareader
import datetime
import pandas_datareader.data as web
```

[10]

```
start = datetime.datetime(2017, 1, 1)
end = datetime.datetime(2018, 5, 9)
```

[13]

```
TechM = web.DataReader("NSE/TECHM",'quandl', start, end)
```

[14]

```
TechM.head()
```

	Open	High	Low	Last	Close	TotalTradeQuantity
Date						
2018-05-08	663.00	666.4	651.05	652.10	653.35	1771130.0
2018-05-07	671.75	675.5	654.20	657.10	657.40	2770174.0
2018-05-04	652.95	665.6	636.45	663.00	662.65	3162498.0
2018-05-03	662.55	667.0	645.90	649.95	652.95	2284475.0
2018-05-02	674.00	674.0	655.50	661.50	662.55	1745715.0

[15]

```
TechM.info()
```

```
<class 'pandas.core.frame.DataFrame'>
DatetimeIndex: 334 entries, 2018-05-08 to 2017-01-02
```

```
Data columns (total 7 columns):
Open                  334 non-null float64
High                  334 non-null float64
Low                   334 non-null float64
Last                  334 non-null float64
Close                 334 non-null float64
TotalTradeQuantity    334 non-null float64
TurnoverLacs          334 non-null float64
dtypes: float64(7)
memory usage: 20.9 KB
```

[16]

```
TCS = web.DataReader("NSE/TCS", 'quandl', start, end)
```

[17]

```
TCS.head()
```

	Open	High	Low	Last	Close	TotalTradeQuantity
Date						
2018-05-08	3434.7	3486.5	3396.7	3440.20	3441.20	1496410.0
2018-05-07	3490.0	3490.0	3410.9	3428.00	3420.95	1742213.0
2018-05-04	3492.0	3497.0	3470.0	3479.00	3480.75	1173622.0
2018-05-03	3509.8	3526.0	3470.4	3481.75	3481.85	1880775.0
2018-05-02	3530.5	3532.2	3471.3	3500.00	3499.75	1579023.0

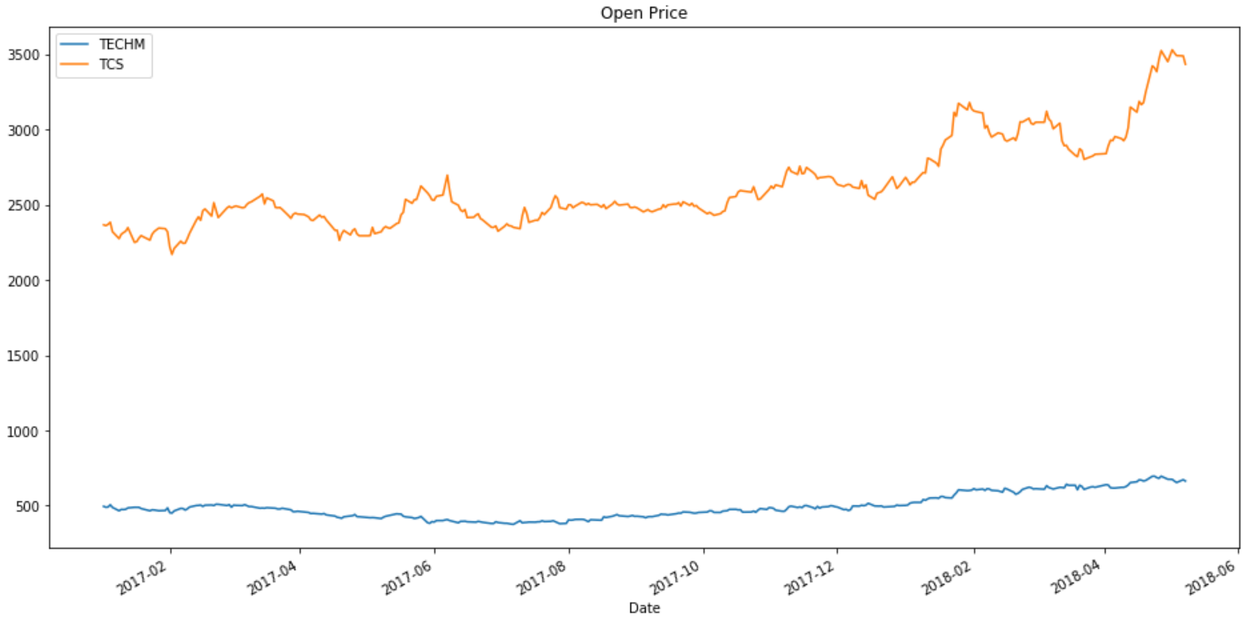
[18]

```
TCS.info()
```

```
<class 'pandas.core.frame.DataFrame'>
DatetimeIndex: 334 entries, 2018-05-08 to 2017-01-02
Data columns (total 7 columns):
Open                  334 non-null float64
High                  334 non-null float64
Low                   334 non-null float64
Last                  334 non-null float64
Close                 334 non-null float64
TotalTradeQuantity    334 non-null float64
TurnoverLacs          334 non-null float64
dtypes: float64(7)
memory usage: 20.9 KB
```

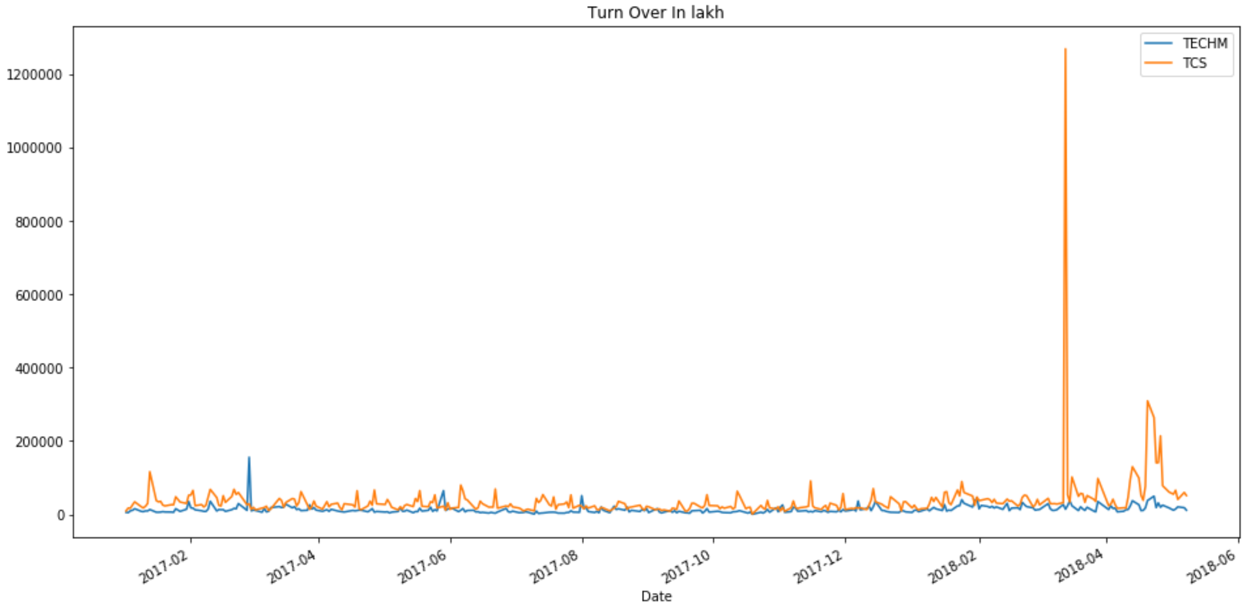
```
[19]    TechM['Open'].plot(label='TECHM',figsize=(16,8),title='Open Price')
        TCS['Open'].plot(label='TCS')
        plt.legend()
```

```
<matplotlib.legend.Legend at 0x26e555c1c88>
```



```
[20]    TechM['TurnoverLacs'].plot(label='TECHM' ,figsize=(16,8),title='Turn Over
        TCS['TurnoverLacs'].plot(label='TCS')
        plt.legend()
```

```
<matplotlib.legend.Legend at 0x26e559685f8>
```



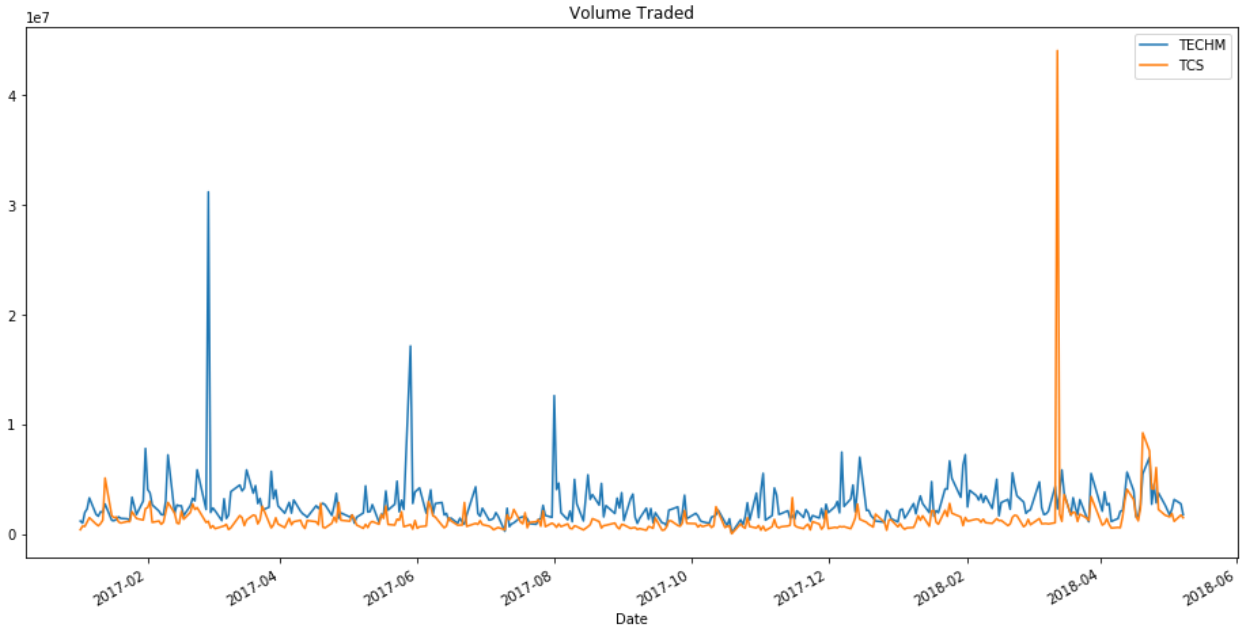
```
[22]    TCS['TurnoverLacs'].argmax()
```

```
C:\ProgramData\Anaconda3\lib\site-packages\ipykernel_launcher.py:1:
FutureWarning: 'argmax' is deprecated. Use 'idxmax' instead. The behavior
of 'argmax' will be corrected to return the positional maximum in the
future. Use 'series.values.argmax' to get the position of the maximum now.
```

```
  """Entry point for launching an IPython kernel.
Timestamp('2018-03-13 00:00:00')
```

```
[23]  TechM['TotalTradeQuantity'].plot(label='TECHM',figsize=(16,8),title='Volu
      TCS['TotalTradeQuantity'].plot(label='TCS')
      plt.legend()
```

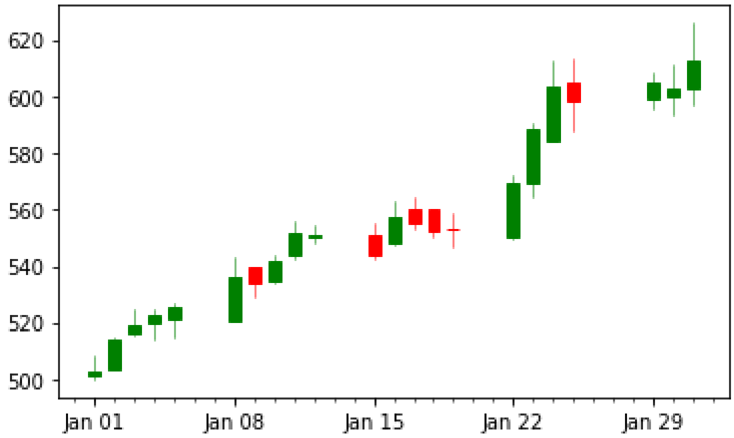
```
<matplotlib.legend.Legend at 0x26e55e16630>
```



CandleSticks

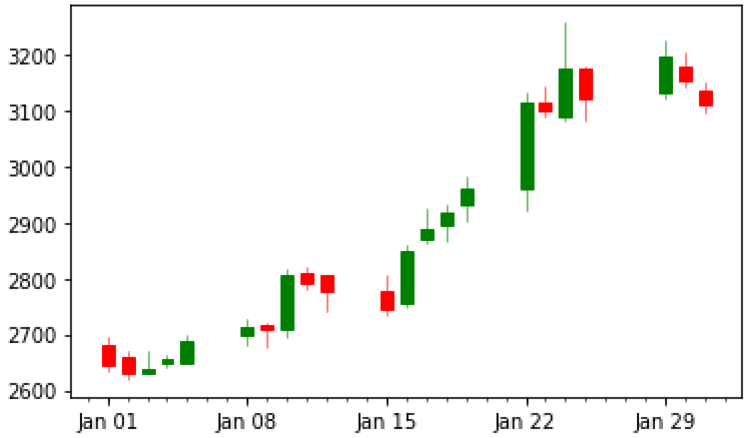
```
[28]  from matplotlib.finance import candlestick_ohlc
      from matplotlib.dates import DateFormatter, date2num, WeekdayLocator, Day

      # Rest the index to get a column of January Dates
      TechM_reset = TechM.loc['2018-01':'2018-01'].reset_index()

      # Create a new column of numerical "date" values for matplotlib to use
      TechM_reset['date_ax'] = TechM_reset['Date'].apply(lambda date: date2num(
      TechM_values = [tuple(vals) for vals in TechM_reset[['date_ax', 'Open', '

      mondays = WeekdayLocator(MONDAY)        # major ticks on the mondays
      alldays = DayLocator()              # minor ticks on the days
      weekFormatter = DateFormatter('%b %d')  # e.g., Jan 12
      dayFormatter = DateFormatter('%d')      # e.g., 12

      #Plot it
      fig, ax = plt.subplots()
      fig.subplots_adjust(bottom=0.2)
      ax.xaxis.set_major_locator(mondays)
      ax.xaxis.set_minor_locator(alldays)
      ax.xaxis.set_major_formatter(weekFormatter)
```

```
candlestick_ohlc(ax, TechM_values, width=0.6, colorup='g',colordown='r');
```



[29]

```
# Rest the index to get a column of January Dates
TCS_reset = TCS.loc['2018-01':'2018-01'].reset_index()

# Create a new column of numerical "date" values for matplotlib to use
TCS_reset['date_ax'] = TCS_reset['Date'].apply(lambda date: date2num(date
TCS_values = [tuple(vals) for vals in TCS_reset[['date_ax', 'Open', 'High

mondays = WeekdayLocator(MONDAY)        # major ticks on the mondays
alldays = DayLocator()              # minor ticks on the days
weekFormatter = DateFormatter('%b %d')  # e.g., Jan 12
dayFormatter = DateFormatter('%d')      # e.g., 12

#Plot it
fig, ax = plt.subplots()
fig.subplots_adjust(bottom=0.2)
ax.xaxis.set_major_locator(mondays)
ax.xaxis.set_minor_locator(alldays)
ax.xaxis.set_major_formatter(weekFormatter)

candlestick_ohlc(ax, TCS_values, width=0.6, colorup='g',colordown='r');
```



Daily percentage Return

```
[30]  TechM['returns'] = TechM['Close'].pct_change(1)
```

```
[31]  TechM.head()
```

	Open	High	Low	Last	Close	TotalTradeQuantity
Date						
2018-05-08	663.00	666.4	651.05	652.10	653.35	1771130.0
2018-05-07	671.75	675.5	654.20	657.10	657.40	2770174.0
2018-05-04	652.95	665.6	636.45	663.00	662.65	3162498.0
2018-05-03	662.55	667.0	645.90	649.95	652.95	2284475.0
2018-05-02	674.00	674.0	655.50	661.50	662.55	1745715.0

```
[32]  TCS['returns'] = TCS['Close'].pct_change(1)
```

```
[33]  TCS.head()
```

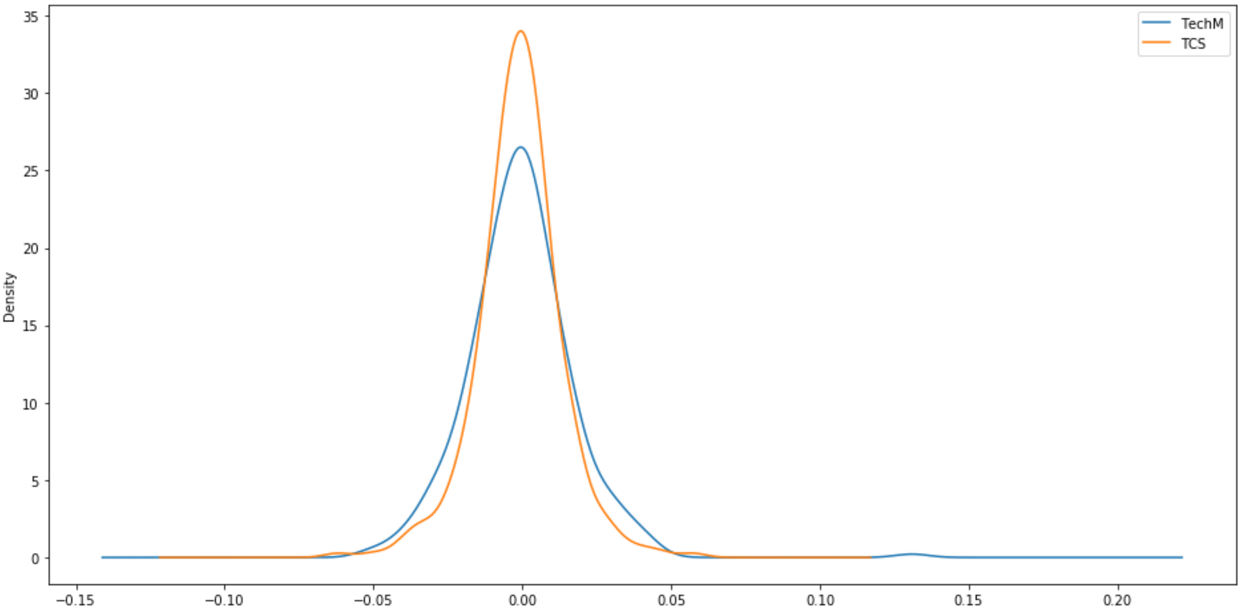
	Open	High	Low	Last	Close	TotalTradeQuantity
Date						
2018-05-08	3434.7	3486.5	3396.7	3440.20	3441.20	1496410.0
2018-05-07	3490.0	3490.0	3410.9	3428.00	3420.95	1742213.0
2018-05-04	3492.0	3497.0	3470.0	3479.00	3480.75	1173622.0
2018-05-03	3509.8	3526.0	3470.4	3481.75	3481.85	1880775.0

	Open	High	Low	Last	Close	TotalTradeQuantity
Date						
2018-05-02	3530.5	3532.2	3471.3	3500.00	3499.75	1579023.0

[34]

```
TechM['returns'].plot(kind='kde', label='TechM',figsize=(16,8))
TCS['returns'].plot(kind='kde',label='TCS')
plt.legend()
```

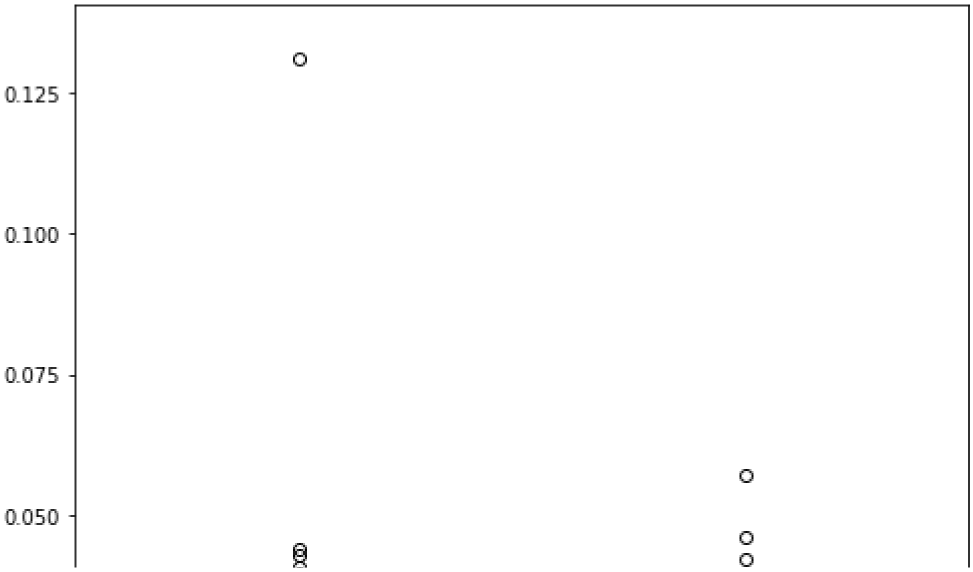
```
<matplotlib.legend.Legend at 0x26e5667cb00>
```



[35]

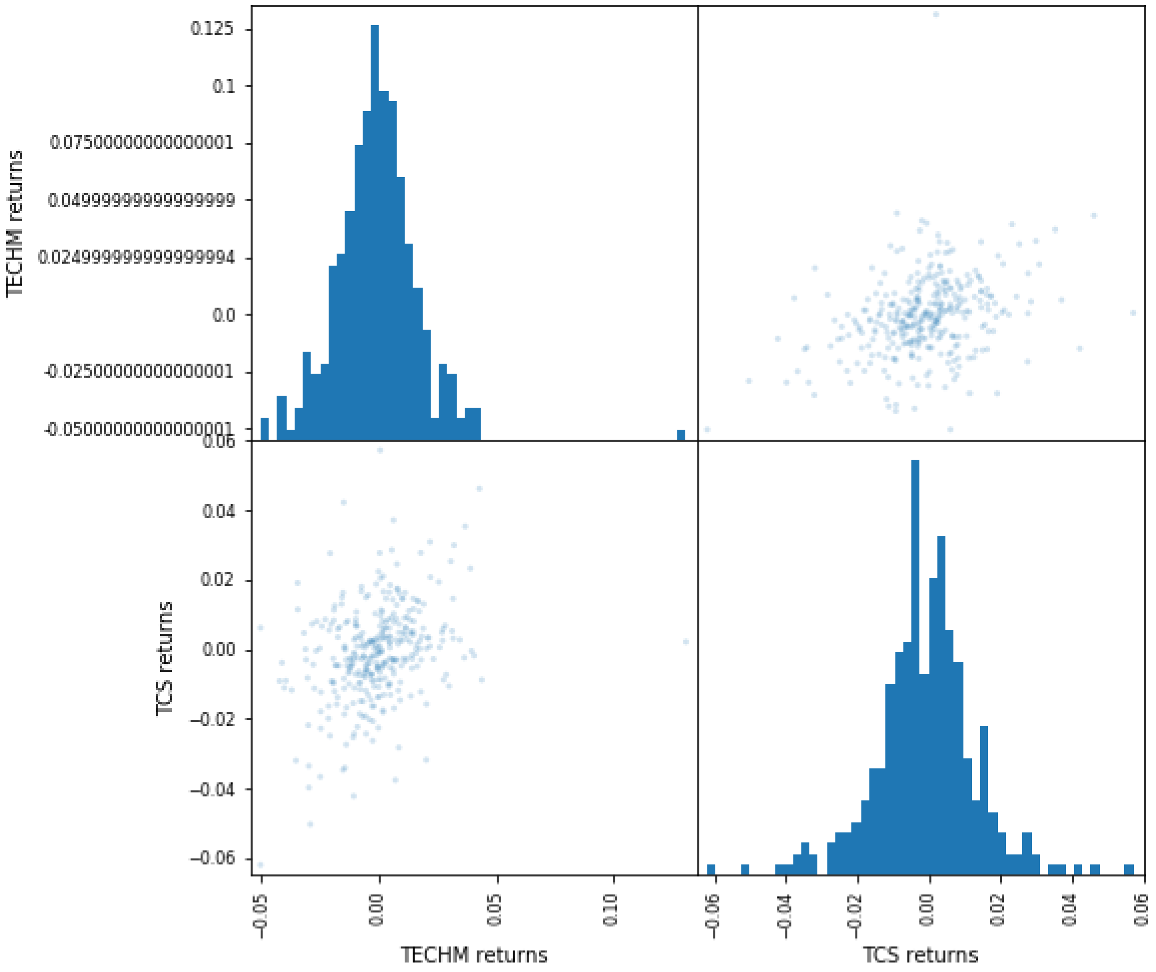
```
box_df = pd.concat([TechM['returns'], TCS['returns']],axis=1)
box_df.columns = ['TECHM returns','TCS returns']
box_df.plot(kind='box',figsize=(8,11),colormap='jet')
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x26e55837e80>
```



[36]

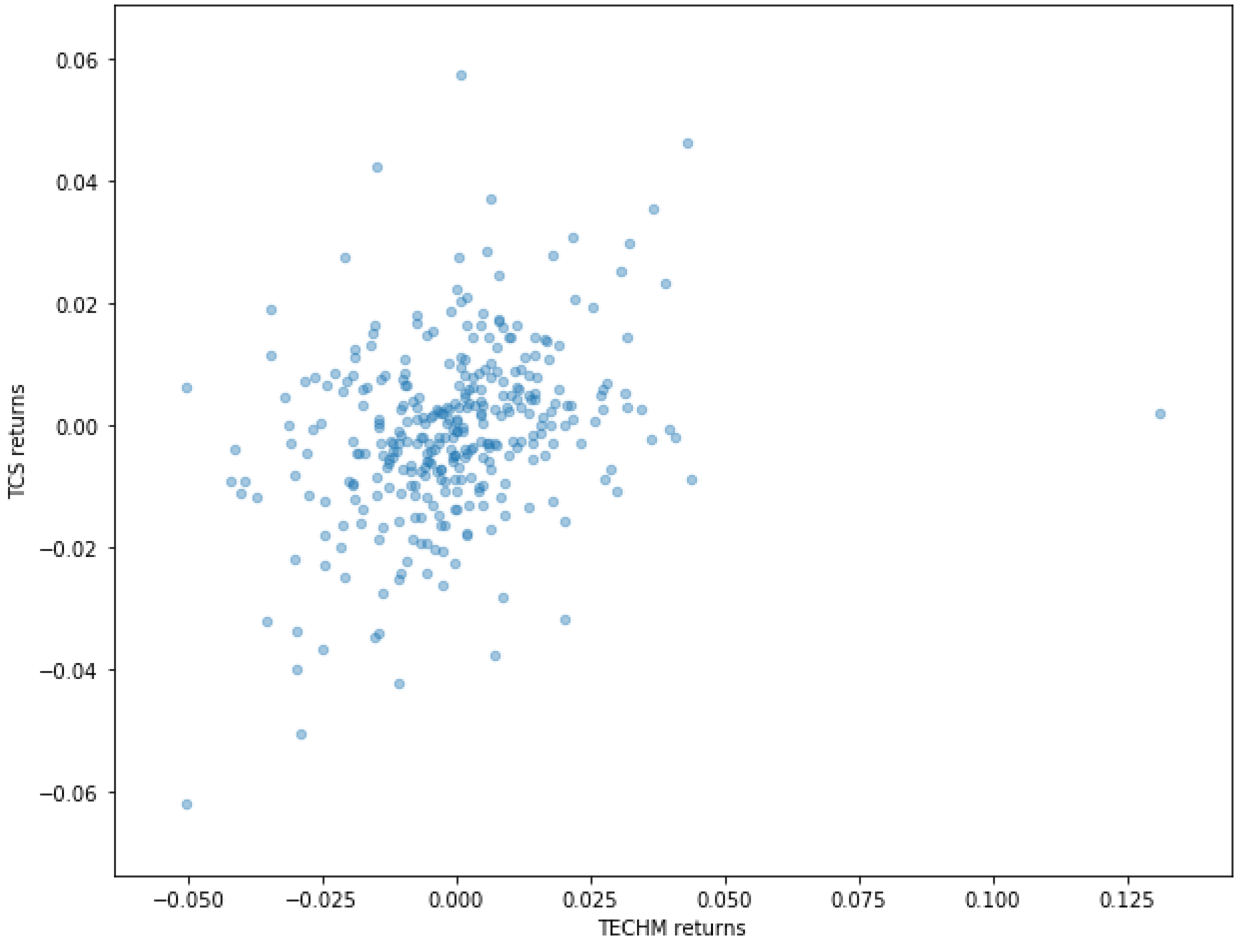
```
from pandas.plotting import scatter_matrix
scatter_matrix(box_df,figsize=(8,8),alpha=0.2,hist_kwds={'bins':50});
```



[37]

```
box_df.plot(kind='scatter',x='TECHM returns',y='TCS returns',alpha=0.4,fi
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x26e575f8860>
```



Cumulative Daily Returns

[38]

```
TechM['Cumulative Return'] = (1 + TechM['returns']).cumprod()
```

[39]

```
TCS['Cumulative Return'] = (1 + TCS['returns']).cumprod()
```

[40]

```
TechM.head()
```

	Open	High	Low	Last	Close	TotalTradeQuantity
Date						
2018-05-08	663.00	666.4	651.05	652.10	653.35	1771130.0
2018-05-07	671.75	675.5	654.20	657.10	657.40	2770174.0
2018-05-04	652.95	665.6	636.45	663.00	662.65	3162498.0

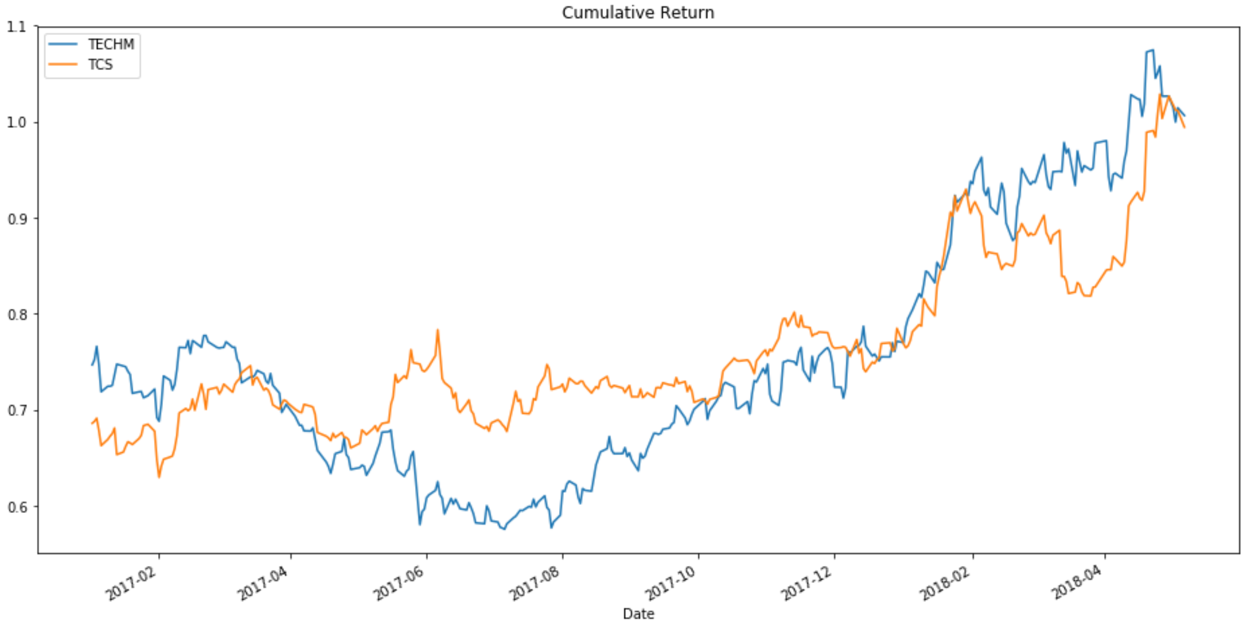
	Open	High	Low	Last	Close	TotalTradeQuantity
Date						
2018-05-03	662.55	667.0	645.90	649.95	652.95	2284475.0
2018-05-02	674.00	674.0	655.50	661.50	662.55	1745715.0

```
[41]    TCS.head()
```

	Open	High	Low	Last	Close	TotalTradeQuantity
Date						
2018-05-08	3434.7	3486.5	3396.7	3440.20	3441.20	1496410.0
2018-05-07	3490.0	3490.0	3410.9	3428.00	3420.95	1742213.0
2018-05-04	3492.0	3497.0	3470.0	3479.00	3480.75	1173622.0
2018-05-03	3509.8	3526.0	3470.4	3481.75	3481.85	1880775.0
2018-05-02	3530.5	3532.2	3471.3	3500.00	3499.75	1579023.0

```
[42]    TechM['Cumulative Return'].plot(label='TECHM',figsize=(16,8),title='Cumul
        TCS['Cumulative Return'].plot(label='TCS')
        plt.legend()
```

```
<matplotlib.legend.Legend at 0x26e5749ad68>
```



TECH MAHINDRA VS TCS WHO WINS YOU DECIDE

```
[ ]
```