

Price_Relative

September 29, 2021

1 Price Relative

https://stockcharts.com/school/doku.php?id=chart_school:technical_indicators:price_relative

```
[1]: import numpy as np
import pandas as pd
import matplotlib.pyplot as plt

import warnings
warnings.filterwarnings("ignore")

# fix_yahoo_finance is used to fetch data
import fix_yahoo_finance as yf
yf.pdr_override()
```

```
[2]: # input
symbol1 = 'AAPL'
symbol2 = '^GSPC'
start = '2018-10-01'
end = '2019-01-01'

# Read data
df1 = yf.download(symbol1,start,end)
df2 = yf.download(symbol2,start,end)
```

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

```
[3]: df = pd.concat([df1['Adj Close'], df2['Adj Close']],axis=1)
```

```
[4]: # Rename columns
df.columns = [symbol1,symbol2]
```

```
[5]: df['Price Relative'] = df['AAPL']/df['^GSPC']
df['Percentage Change in Price Relative'] = ((df['Price Relative']-df['Price_
↪Relative']).shift())/df['Price Relative'].shift()*100
```

```
[6]: df.head()
```

```
[6]:
```

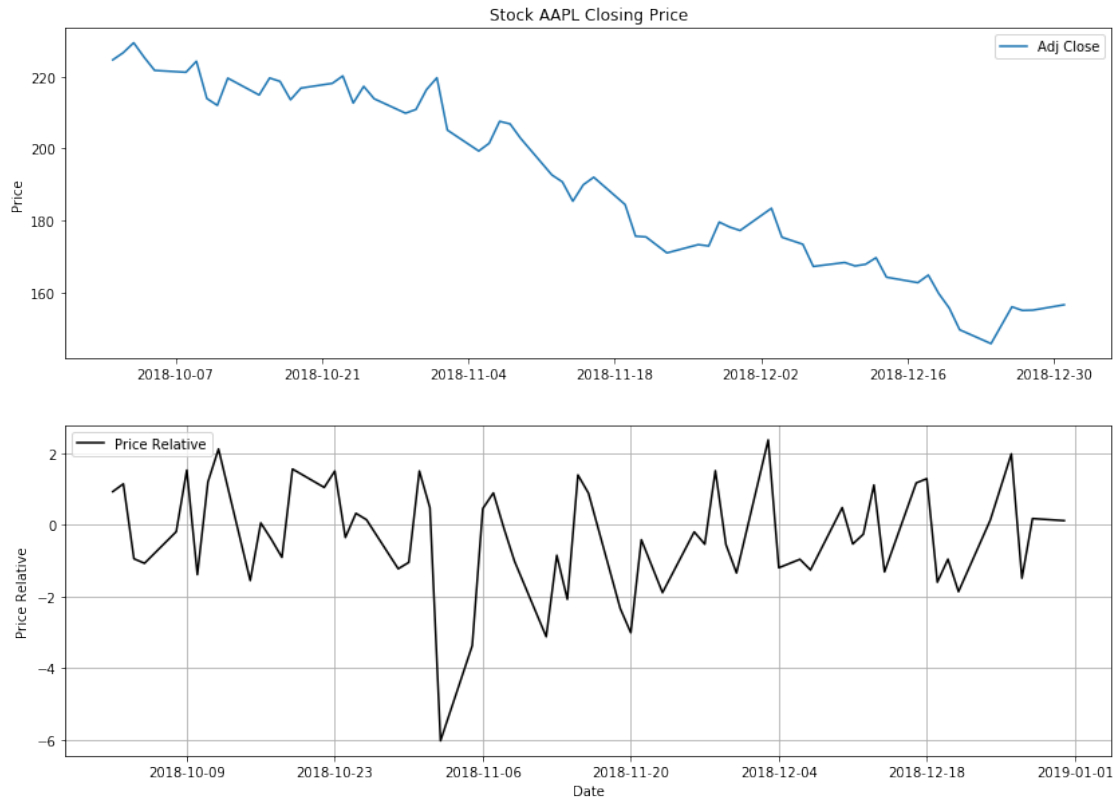
	AAPL	^GSPC	Price Relative \
Date			
2018-10-01	224.637604	2924.590088	0.076810
2018-10-02	226.634293	2923.429932	0.077523
2018-10-03	229.392090	2925.510010	0.078411
2018-10-04	225.359177	2901.610107	0.077667
2018-10-05	221.701859	2885.570068	0.076831

Percentage Change in Price Relative	
Date	
2018-10-01	NaN
2018-10-02	0.928886
2018-10-03	1.144882
2018-10-04	-0.948891
2018-10-05	-1.076034

```
[7]: fig = plt.figure(figsize=(14,10))
ax1 = plt.subplot(2, 1, 1)
ax1.plot(df1['Adj Close'])
ax1.set_title('Stock ' + symbol1 + ' Closing Price')
ax1.set_ylabel('Price')
ax1.legend(loc='best')

ax2 = plt.subplot(2, 1, 2)
ax2.plot(df['Percentage Change in Price Relative'], label='Price Relative',
        color='black')
ax2.grid()
ax2.legend(loc='best')
ax2.set_ylabel('Price Relative')
ax2.set_xlabel('Date')
```

```
[7]: Text(0.5,0,'Date')
```



1.1 Candlestick with Price Relative

```
[8]: from matplotlib import dates as mdates
import datetime as dt

dfc = df1.copy()
dfc['VolumePositive'] = dfc['Open'] < dfc['Adj Close']
#dfc = dfc.dropna()
dfc = dfc.reset_index()
dfc['Date'] = mdates.date2num(dfc['Date'].astype(dt.date))
dfc.head()
```

```
[8]:      Date      Open      High      Low      Close  Adj Close  \
0  736968.0  227.949997  229.419998  226.350006  227.259995  224.637604
1  736969.0  227.250000  230.000000  226.630005  229.279999  226.634293
2  736970.0  230.050003  233.470001  229.779999  232.070007  229.392090
3  736971.0  230.779999  232.350006  226.729996  227.990005  225.359177
4  736972.0  227.960007  228.410004  220.580002  224.289993  221.701859

      Volume  VolumePositive
0  23600800             False
```

1	24788200	False
2	28654800	False
3	32042000	False
4	33580500	False

```
[9]: from mpl_finance import candlestick_ohlc

fig = plt.figure(figsize=(14,10))
ax1 = plt.subplot(2, 1, 1)
candlestick_ohlc(ax1,dfc.values, width=0.5, colorup='g', colordown='r', alpha=1.
    ↪0)
ax1.xaxis_date()
ax1.xaxis.set_major_formatter(mdates.DateFormatter('%d-%m-%Y'))
ax1.grid(True, which='both')
ax1.minorticks_on()
ax1v = ax1.twinx()
colors = dfc.VolumePositive.map({True: 'g', False: 'r'})
ax1v.bar(dfc.Date, dfc['Volume'], color=colors, alpha=0.4)
ax1v.axes.yaxis.set_ticklabels([])
ax1v.set_ylim(0, 3*df1.Volume.max())
ax1.set_title('Stock ' + symbol1 + ' Closing Price')
ax1.set_ylabel('Price')

ax2 = plt.subplot(2, 1, 2)
ax2.plot(df['Percentage Change in Price Relative'], label='Price Relative',
    ↪color='black')
ax2.grid()
ax2.legend(loc='best')
ax2.set_ylabel('Price Relative')
ax2.set_xlabel('Date')
```

```
[9]: Text(0.5,0,'Date')
```

