VPT

September 29, 2021

1 Volume Price Trend (VPT)

https://en.wikipedia.org/wiki/Volume%E2%80%93price_trend

[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
symbol = 'AAPL'
start = '2018-08-01'
end = '2019-01-01'

# Read data
df = yf.download(symbol,start,end)

# View Columns
df.head()
```

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

[2]:

Date	Open	High	Low	Close	Adj Close	Volume
2018-08-01	199.130005	201.759995	197.309998	201.500000	198.478760	
2018-08-02	200.580002	208.380005	200.350006	207.389999	204.280457	
2018-08-03	207.029999	208.740005	205.479996	207.990005	204.871445	
2018-08-06	208.000000	209.250000	207.070007	209.070007	205.935257	
2018-08-07	209.320007	209.500000	206.759995	207.110001	204.004639	

```
2018-08-01  67935700
2018-08-02  62404000
2018-08-03  33447400
2018-08-06  25425400
2018-08-07  25587400
```

[3]:
```
vpt = df['Volume'] * ((df['Adj Close'] - df['Adj Close'].shift(1)) / df['Adj␣
 ↪Close'].shift(1))
vpt = vpt.shift(1) + vpt
vpt = vpt.replace([np.inf, -np.inf], np.nan).fillna(0)
df['VPT'] = pd.Series(vpt)
```

[4]:
```
df.head()
```

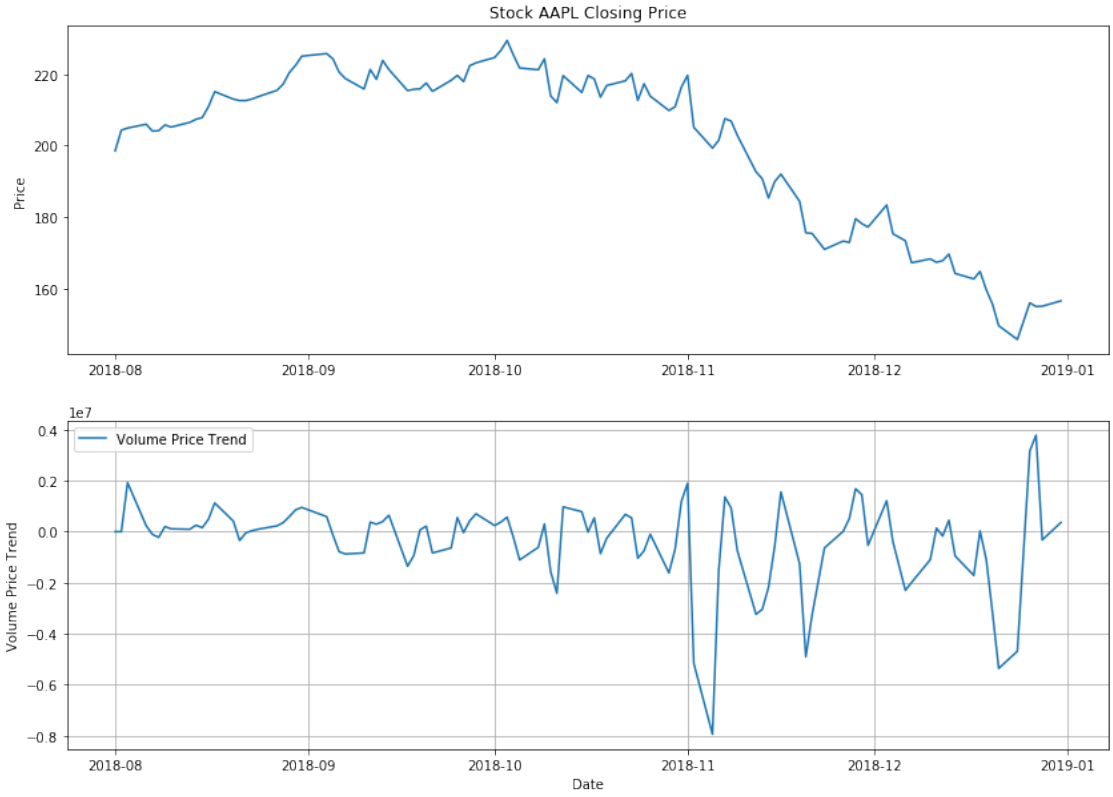
[4]:
```
                 Open        High         Low       Close   Adj Close  \
Date
2018-08-01  199.130005  201.759995  197.309998  201.500000  198.478760
2018-08-02  200.580002  208.380005  200.350006  207.389999  204.280457
2018-08-03  207.029999  208.740005  205.479996  207.990005  204.871445
2018-08-06  208.000000  209.250000  207.070007  209.070007  205.935257
2018-08-07  209.320007  209.500000  206.759995  207.110001  204.004639

               Volume           VPT
Date
2018-08-01  67935700  0.000000e+00
2018-08-02  62404000  0.000000e+00
2018-08-03  33447400  1.920884e+06
2018-08-06  25425400  2.287876e+05
2018-08-07  25587400 -1.078553e+05
```

[5]:
```
fig = plt.figure(figsize=(14,10))
ax1 = plt.subplot(2, 1, 1)
ax1.plot(df['Adj Close'])
ax1.set_title('Stock '+ symbol +' Closing Price')
ax1.set_ylabel('Price')

ax2 = plt.subplot(2, 1, 2)
ax2.plot(df['VPT'], label='Volume Price Trend')
ax2.grid()
ax2.legend(loc='best')
ax2.set_ylabel('Volume Price Trend')
ax2.set_xlabel('Date')
```

[5]:
```
Text(0.5,0,'Date')
```



1.1 Candlestick with Volume Price Trend

[6]:
```
from matplotlib import dates as mdates
import datetime as dt

dfc = df.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()
```

[6]:

	Date	Open	High	Low	Close	Adj Close	\
0	736907.0	199.130005	201.759995	197.309998	201.500000	198.478760	
1	736908.0	200.580002	208.380005	200.350006	207.389999	204.280457	
2	736909.0	207.029999	208.740005	205.479996	207.990005	204.871445	
3	736912.0	208.000000	209.250000	207.070007	209.070007	205.935257	
4	736913.0	209.320007	209.500000	206.759995	207.110001	204.004639	

	Volume	VPT	VolumePositive
0	67935700	0.000000e+00	False

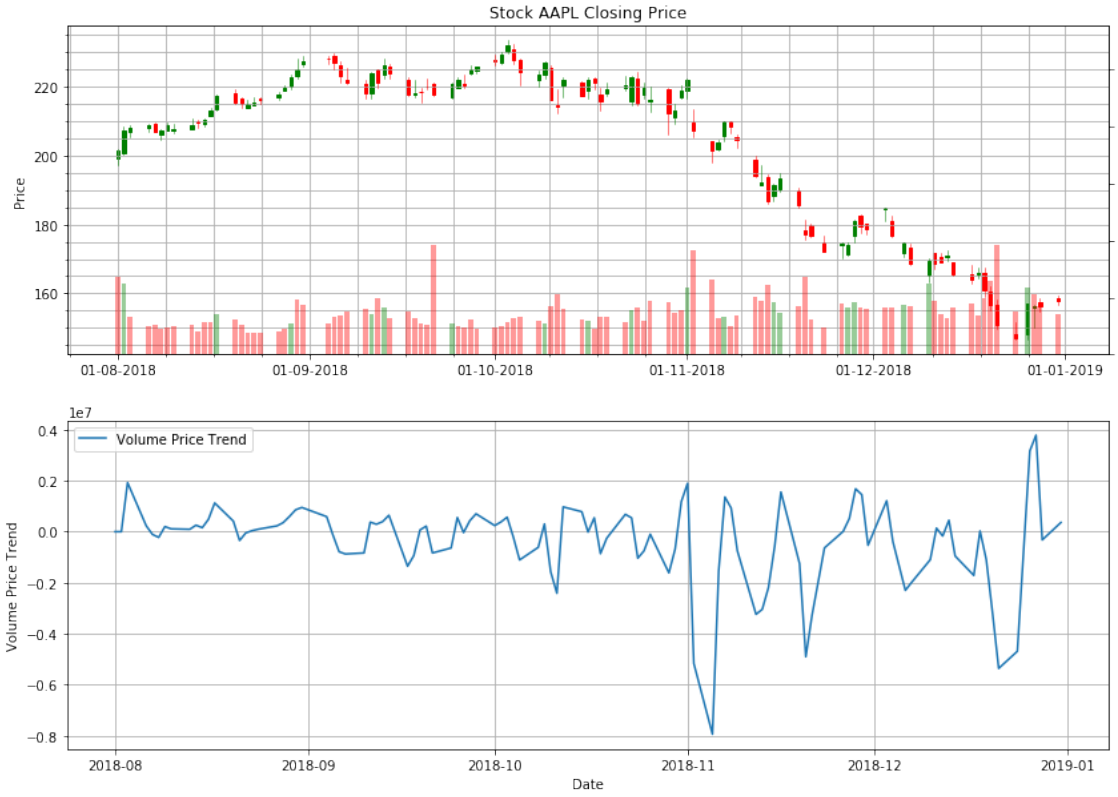
```
1  62404000  0.000000e+00           True
2  33447400  1.920884e+06          False
3  25425400  2.287876e+05          False
4  25587400 -1.078553e+05          False
```

[7]:
```
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*df.Volume.max())
ax1.set_title('Stock '+ symbol +' Closing Price')
ax1.set_ylabel('Price')

ax2 = plt.subplot(2, 1, 2)
ax2.plot(df['VPT'], label='Volume Price Trend')
ax2.grid()
ax2.legend(loc='best')
ax2.set_ylabel('Volume Price Trend')
ax2.set_xlabel('Date')
```

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


Stock AAPL Closing Price
Price
220
200
180
160
01-08-2018
01-09-2018
01-10-2018
01-11-2018
01-12-2018
01-01-2019
1e7
Volume Price Trend
0.4
0.2
0.0
−0.2
−0.4
−0.6
−0.8
2018-08
2018-09
2018-10
2018-11
2018-12
2019-01
Date