VWAP

September 29, 2021

1 Volume Weighted Average Price (VWAP)

https://www.investopedia.com/terms/v/vwap.asp

[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	199.243088	
2018-08-02	200.580002	208.380005	200.350006	207.389999	205.067123	
2018-08-03	207.029999	208.740005	205.479996	207.990005	205.660416	
2018-08-06	208.000000	209.250000	207.070007	209.070007	206.728317	
2018-08-07	209.320007	209.500000	206.759995	207.110001	204.790268	

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

[3]:
```
def VWAP(df):
    return (df['Adj Close'] * df['Volume']).sum() / df['Volume'].sum()
```

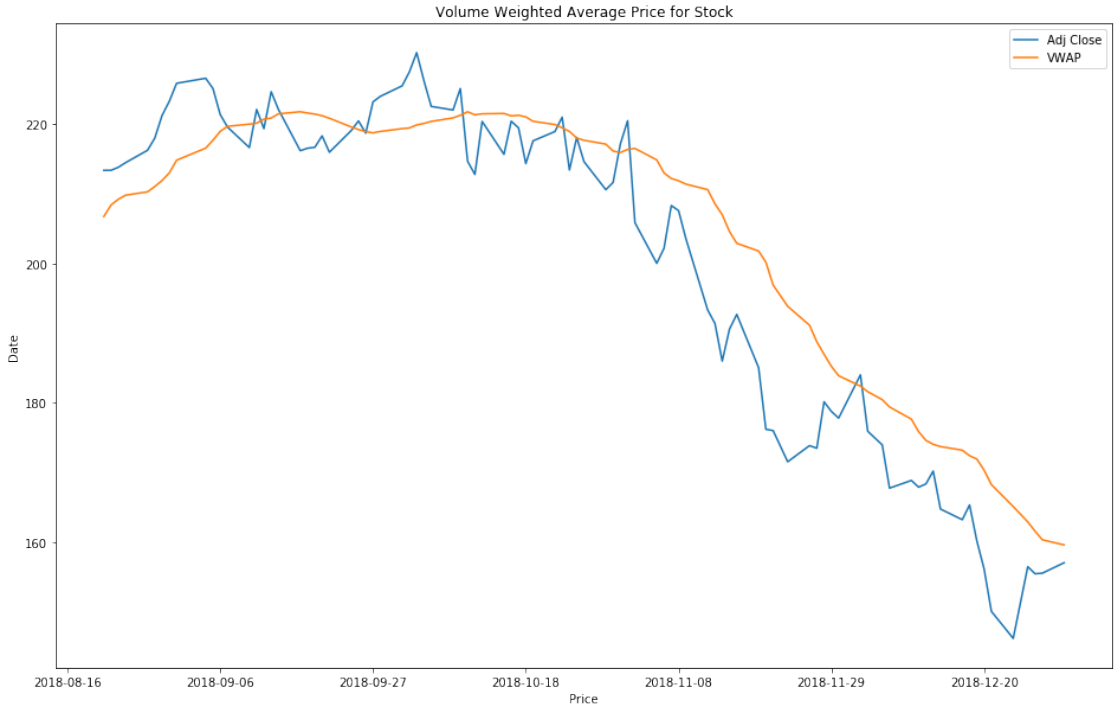
[4]:
```
n = 14
df['VWAP'] = pd.concat([(pd.Series(VWAP(df.iloc[i:i+n]), index=[df.
 ↪index[i+n]])) for i in range(len(df)-n)])
```

[5]:
```
df = df.dropna()
df.head()
```

[5]:

Date	Open	High	Low	Close	Adj Close	Volume	VWAP
2018-08-21	216.800003	217.190002	214.029999	215.039993	213.377167	26159800	206.760152
2018-08-22	214.100006	216.360001	213.839996	215.050003	213.387085	19018100	208.414705
2018-08-23	214.649994	217.050003	214.600006	215.490005	213.823685	18883200	209.235146
2018-08-24	216.600006	216.899994	215.110001	216.160004	214.488495	18476400	209.815502
2018-08-27	217.149994	218.740005	216.330002	217.940002	216.254745	20525100	210.288656

[6]:
```
plt.figure(figsize=(16,10))
plt.plot(df['Adj Close'])
plt.plot(df['VWAP'])
plt.title('Volume Weighted Average Price for Stock')
plt.legend(loc='best')
plt.xlabel('Price')
plt.ylabel('Date')
plt.show()
```



1.1 Candlestick with VWAP

[7]:
```
from matplotlib import dates as mdates
import datetime as dt


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

[7]:

	Date	Open	High	Low	Close	Adj Close	Volume	VWAP	VolumePositive
0	736927.0	216.800003	217.190002	214.029999	215.039993	213.377167	26159800	206.760152	False
1	736928.0	214.100006	216.360001	213.839996	215.050003	213.387085	19018100	208.414705	False
2	736929.0	214.649994	217.050003	214.600006	215.490005	213.823685	18883200	209.235146	False
3	736930.0	216.600006	216.899994	215.110001	216.160004	214.488495	18476400	209.815502	False
4	736933.0	217.149994	218.740005	216.330002	217.940002	216.254745			

```
4   20525100   210.288656           False
```

[8]:
```
from mpl_finance import candlestick_ohlc

fig = plt.figure(figsize=(16,8))
ax1 = plt.subplot(111)
candlestick_ohlc(ax1,df.values, width=0.5, colorup='g', colordown='r', alpha=1.
 ↪0)
ax1.plot(df.Date, df['VWAP'])
ax1.xaxis_date()
ax1.xaxis.set_major_formatter(mdates.DateFormatter('%d-%m-%Y'))
#ax1.axhline(y=dfc['Adj Close'].mean(),color='r')
ax1v = ax1.twinx()
colors = df.VolumePositive.map({True: 'g', False: 'r'})
ax1v.bar(df.Date, df['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')
ax1.set_xlabel('Date')
ax1.legend(loc='best')
```

[8]:
```
<matplotlib.legend.Legend at 0x154804bbeb8>
```