

CMF

September 29, 2021

1 Chaikin Money Flow (CMF)

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

```
[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 = '2018-06-01'
end = '2019-01-01'

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

# View Columns
df.head()
```

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

```
[2]:
```

	Open	High	Low	Close	Adj Close	\
Date						
2018-06-01	187.990005	190.259995	187.750000	190.240005	188.109222	
2018-06-04	191.639999	193.419998	191.350006	191.830002	189.681396	
2018-06-05	193.070007	193.940002	192.360001	193.309998	191.144821	
2018-06-06	193.630005	194.080002	191.919998	193.979996	191.807312	
2018-06-07	194.139999	194.199997	192.339996	193.460007	191.293152	

	Volume
Date	

```

2018-06-01 23442500
2018-06-04 26266200
2018-06-05 21566000
2018-06-06 20933600
2018-06-07 21347200

```

```

[3]: n = 20
df['MF_Multiplier'] = (2*df['Adj Close'] - df['Low'] - df['High'])/
    ↪(df['High']-df['Low'])
df['MF_Volume'] = df['MF_Multiplier']*df['Volume']
df['CMF'] = df['MF_Volume'].rolling(n).sum()/df['Volume'].rolling(n).sum()
df = df.drop(['MF_Multiplier', 'MF_Volume'],axis=1)

```

```

[4]: df.head(30)

```

```

[4]:

```

	Open	High	Low	Close	Adj Close \
Date					
2018-06-01	187.990005	190.259995	187.750000	190.240005	188.109222
2018-06-04	191.639999	193.419998	191.350006	191.830002	189.681396
2018-06-05	193.070007	193.940002	192.360001	193.309998	191.144821
2018-06-06	193.630005	194.080002	191.919998	193.979996	191.807312
2018-06-07	194.139999	194.199997	192.339996	193.460007	191.293152
2018-06-08	191.169998	192.000000	189.770004	191.699997	189.552856
2018-06-11	191.350006	191.970001	190.210007	191.229996	189.088135
2018-06-12	191.389999	192.610001	191.149994	192.279999	190.126358
2018-06-13	192.419998	192.880005	190.440002	190.699997	188.564056
2018-06-14	191.550003	191.570007	190.220001	190.800003	188.662933
2018-06-15	190.029999	190.160004	188.259995	188.839996	186.724884
2018-06-18	187.880005	189.220001	187.199997	188.740005	186.626022
2018-06-19	185.139999	186.330002	183.449997	185.690002	183.610168
2018-06-20	186.350006	187.199997	185.729996	186.500000	184.411102
2018-06-21	187.250000	188.350006	184.940002	185.460007	183.382751
2018-06-22	186.119995	186.149994	184.699997	184.919998	182.848785
2018-06-25	183.399994	184.919998	180.729996	182.169998	180.129608
2018-06-26	182.990005	186.529999	182.539993	184.429993	182.364288
2018-06-27	185.229996	187.279999	184.029999	184.160004	182.097321
2018-06-28	184.100006	186.210007	183.800003	185.500000	183.422302
2018-06-29	186.289993	187.190002	182.910004	185.110001	183.036682
2018-07-02	183.820007	187.300003	183.419998	187.179993	185.083466
2018-07-03	187.789993	187.949997	183.539993	183.919998	181.859985
2018-07-05	185.259995	186.410004	184.279999	185.399994	183.323410
2018-07-06	185.419998	188.429993	185.199997	187.970001	185.864655
2018-07-09	189.500000	190.679993	189.300003	190.580002	188.445404
2018-07-10	190.710007	191.279999	190.179993	190.350006	188.217972
2018-07-11	188.500000	189.779999	187.610001	187.880005	185.775650
2018-07-12	189.529999	191.410004	189.309998	191.029999	188.890366
2018-07-13	191.080002	191.839996	190.899994	191.330002	189.187012

Date	Volume	CMF
2018-06-01	23442500	NaN
2018-06-04	26266200	NaN
2018-06-05	21566000	NaN
2018-06-06	20933600	NaN
2018-06-07	21347200	NaN
2018-06-08	26656800	NaN
2018-06-11	18308500	NaN
2018-06-12	16911100	NaN
2018-06-13	21638400	NaN
2018-06-14	21610100	NaN
2018-06-15	61719200	NaN
2018-06-18	18484900	NaN
2018-06-19	33578500	NaN
2018-06-20	20628700	NaN
2018-06-21	25711900	NaN
2018-06-22	27200400	NaN
2018-06-25	31663100	NaN
2018-06-26	24569200	NaN
2018-06-27	25285300	NaN
2018-06-28	17365200	-2.017256
2018-06-29	22737700	-2.029317
2018-07-02	17731300	-1.930931
2018-07-03	13954800	-1.899263
2018-07-05	16604200	-1.933629
2018-07-06	17485200	-1.876069
2018-07-09	19756600	-1.929613
2018-07-10	15939100	-2.005523
2018-07-11	18831500	-2.018630
2018-07-12	18041100	-1.970863
2018-07-13	12513900	-1.980846

```
[5]: fig = plt.figure(figsize=(14,10))
ax1 = plt.subplot(3, 1, 1)
ax1.plot(df['Adj Close'])
ax1.set_title('Stock ' + symbol + ' Closing Price')
ax1.set_ylabel('Price')
ax1.set_xlabel('Date')
ax1.legend(loc='best')

ax2 = plt.subplot(3, 1, 2)
ax2.plot(df['CMF'])
#df['Positive'] = df['CMF'] > 0
#ax2.bar(df.index, df['CMF'], color=df.Positive.map({True: 'g', False: 'r'}))
#ax2.axhline(y=0, color='red')
```

```

ax2.grid()
ax2.set_ylabel('Chaikin Money Flow')

ax3 = plt.subplot(3, 1, 3)
df['Positive'] = df['Open'] < df['Adj Close']
colors = df.Positive.map({True: 'g', False: 'r'})
ax3.bar(df.index, df['Volume'], color=colors, alpha=0.4)
ax3.set_ylabel('Volume')
ax3.grid(True)

```



2 Candlestick with CMF

```

[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	736846.0	187.990005	190.259995	187.750000	190.240005	188.109222	
1	736849.0	191.639999	193.419998	191.350006	191.830002	189.681396	
2	736850.0	193.070007	193.940002	192.360001	193.309998	191.144821	
3	736851.0	193.630005	194.080002	191.919998	193.979996	191.807312	
4	736852.0	194.139999	194.199997	192.339996	193.460007	191.293152	

	Volume	CMF	Positive	VolumePositive
0	23442500	NaN	True	True
1	26266200	NaN	False	False
2	21566000	NaN	False	False
3	20933600	NaN	False	False
4	21347200	NaN	False	False

```
[7]: from mpl_finance import candlestick_ohlc

fig = plt.figure(figsize=(14,10))
ax1 = plt.subplot(3, 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')
ax1.set_xlabel('Date')

ax2 = plt.subplot(3, 1, 2)
ax2.plot(df['CMF'])
#df['Positive'] = df['CMF'] > 0
#ax2.bar(df.index, df['CMF'], color=df.Positive.map({True: 'g', False: 'r'}))
#ax2.axhline(y=0, color='red')
ax2.grid()
ax2.set_ylabel('Chaikin Money Flow')

ax3 = plt.subplot(3, 1, 3)
df['Positive'] = df['Open'] < df['Adj Close']
colors = df.Positive.map({True: 'g', False: 'r'})
ax3.bar(df.index, df['Volume'], color=colors, alpha=0.4)
ax3.set_ylabel('Volume')
ax3.grid(True)
```

