

Central_Pivot_Range_CPR

September 29, 2021

1 Central Pivot Range (CPR)

<https://www.tradingview.com/script/EGsBWBpe-SD-Developing-Central-Pivot-Range/>

<https://pivotboss.com/2010/05/31/a-quick-guide-to-the-pivot-range/>

```
[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]:
```

	Open	High	Low	Close	Adj Close	\
Date						
2018-01-02	170.160004	172.300003	169.259995	172.259995	167.701889	
2018-01-03	172.529999	174.550003	171.960007	172.229996	167.672668	
2018-01-04	172.539993	173.470001	172.080002	173.029999	168.451508	
2018-01-05	173.440002	175.369995	173.050003	175.000000	170.369385	
2018-01-08	174.350006	175.610001	173.929993	174.350006	169.736588	

	Volume
Date	
2018-01-02	25555900
2018-01-03	29517900
2018-01-04	22434600
2018-01-05	23660000
2018-01-08	20567800

```
[3]: df['Pivot'] = (df['High'] + df['Low'] + df['Adj Close']) / 3.0
df['BC'] = (df['High'] + df['Low']) / 2.0
df['TC'] = (df['Pivot'] - df['BC']) + df['Pivot']
```

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

```
[4]:
```

	Open	High	Low	Close	Adj Close	\
Date						
2018-01-02	170.160004	172.300003	169.259995	172.259995	167.701889	
2018-01-03	172.529999	174.550003	171.960007	172.229996	167.672668	
2018-01-04	172.539993	173.470001	172.080002	173.029999	168.451508	
2018-01-05	173.440002	175.369995	173.050003	175.000000	170.369385	
2018-01-08	174.350006	175.610001	173.929993	174.350006	169.736588	

	Volume	Pivot	BC	TC
Date				
2018-01-02	25555900	169.753962	170.779999	168.727926
2018-01-03	29517900	171.394226	173.255005	169.533447
2018-01-04	22434600	171.333837	172.775002	169.892673
2018-01-05	23660000	172.929794	174.209999	171.649590
2018-01-08	20567800	173.092194	174.769997	171.414391

```
[5]: df.tail()
```

```
[5]:
```

	Open	High	Low	Close	Adj Close	\
Date						
2018-12-24	148.149994	151.550003	146.589996	146.830002	145.090836	
2018-12-26	148.300003	157.229996	146.720001	157.169998	155.308350	
2018-12-27	155.839996	156.770004	150.070007	156.149994	154.300446	
2018-12-28	157.500000	158.520004	154.550003	156.229996	154.379486	
2018-12-31	158.529999	159.360001	156.479996	157.740005	155.871613	

	Volume	Pivot	BC	TC
Date				
2018-12-24	37169200	147.743612	149.069999	146.417224
2018-12-26	58582500	153.086116	151.974998	154.197233
2018-12-27	53117100	153.713486	153.420006	154.006966
2018-12-28	42291400	155.816498	156.535004	155.097992
2018-12-31	35003500	157.237203	157.919999	156.554408

```
[7]: plt.figure(figsize=(14,10))
plt.plot(df['Adj Close'])
plt.plot(df['TC'], label='Central Pivot Range')
plt.plot(df['Pivot'], label='Central Pivot Range')
plt.plot(df['BC'], label='Central Pivot Range')
plt.title('Stock ' + symbol + ' Closing Price')
plt.ylabel('Price')
plt.legend(loc='best')
```

```
[7]: <matplotlib.legend.Legend at 0x289155bd3c8>
```



1.1 Candlestick with Central Pivot Range (CPR)

```
[8]: 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'] = pd.to_datetime(dfc['Date'])
dfc['Date'] = dfc['Date'].apply(mdates.date2num)
```

```
dfc.head()
```

```
[8]:
```

	Date	Open	High	Low	Close	Adj Close	\
0	736696.0	170.160004	172.300003	169.259995	172.259995	167.701889	
1	736697.0	172.529999	174.550003	171.960007	172.229996	167.672668	
2	736698.0	172.539993	173.470001	172.080002	173.029999	168.451508	
3	736699.0	173.440002	175.369995	173.050003	175.000000	170.369385	
4	736702.0	174.350006	175.610001	173.929993	174.350006	169.736588	

	Volume	Pivot	BC	TC	VolumePositive
0	25555900	169.753962	170.779999	168.727926	False
1	29517900	171.394226	173.255005	169.533447	False
2	22434600	171.333837	172.775002	169.892673	False
3	23660000	172.929794	174.209999	171.649590	False
4	20567800	173.092194	174.769997	171.414391	False

```
[21]: from mpl_finance import candlestick_ohlc

fig = plt.figure(figsize=(32,25))
ax1 = plt.subplot(2, 1, 1)
ax1.plot(df['Pivot'], label='Pivot')
ax1.plot(df['BC'], label='BC')
ax1.plot(df['TC'], label='TC')
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.legend(loc='best')
```

```
[21]: <matplotlib.legend.Legend at 0x28920b94c18>
```

