PivotPoint

September 29, 2021

1 Pivot Point Indicators

https://en.wikipedia.org/wiki/Pivot_point_(technical_analysis)

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

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

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 = 'AMD'
market = 'SPY'
start = '2017-01-01'
end = '2019-01-01'

# Read data
dataset = yf.download(symbol,start,end)
benchmark = yf.download(market,start,end)

# View Columns
dataset.head()
benchmark.head()
```

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

[2]:
```
                  Open        High         Low       Close   Adj Close  \
Date
2017-01-03  225.039993  225.830002  223.880005  225.240005  215.875137
```

```
2017-01-04  225.619995  226.750000  225.610001  226.580002  217.159409
2017-01-05  226.270004  226.580002  225.479996  226.399994  216.986893
2017-01-06  226.529999  227.750000  225.899994  227.210007  217.763229
2017-01-09  226.910004  227.070007  226.419998  226.460007  217.044403

              Volume
Date
2017-01-03  91366500
2017-01-04  78744400
2017-01-05  78379000
2017-01-06  71559900
2017-01-09  46265300
```

[3]:
```
dataset['Returns'] = dataset['Adj Close'].pct_change().dropna()
```

2 Stock Pivot Points

2.1 Standard Pivot Points

[4]:
```
# Floor Pivot Points (Basic Pivot Points) - Support and Resistance
# https://www.investopedia.com/trading/using-pivot-points-for-predictions/
PP = pd.Series((dataset['High'] + dataset['Low'] + dataset['Close']) / 3)
R1 = pd.Series(2 * PP - dataset['Low'])
S1 = pd.Series(2 * PP - dataset['High'])
R2 = pd.Series(PP + dataset['High'] - dataset['Low'])
S2 = pd.Series(PP - dataset['High'] + dataset['Low'])
R3 = pd.Series(dataset['High'] + 2 * (PP - dataset['Low']))
S3 = pd.Series(dataset['Low'] - 2 * (dataset['High'] - PP))
R4 = pd.Series(dataset['High'] + 3 * (PP - dataset['Low']))
S4 = pd.Series(dataset['Low'] - 3 * (dataset['High'] - PP))
R5 = pd.Series(dataset['High'] + 4 * (PP - dataset['Low']))
S5 = pd.Series(dataset['Low'] - 4 * (dataset['High'] - PP))
P = pd.Series((dataset['Open'] + (dataset['High'] + dataset['Low'] +␣
↪dataset['Close'])) / 4) # Opening Price Formula
psr = {'P':P, 'R1':R1, 'S1':S1, 'R2':R2, 'S2':S2, 'R3':R3, 'S3':S3,'R4':R4,␣
↪'S4':S4,'R5':R5, 'S5':S5}
PSR = pd.DataFrame(psr)
dataset = dataset.join(PSR)
print(dataset.head())
```

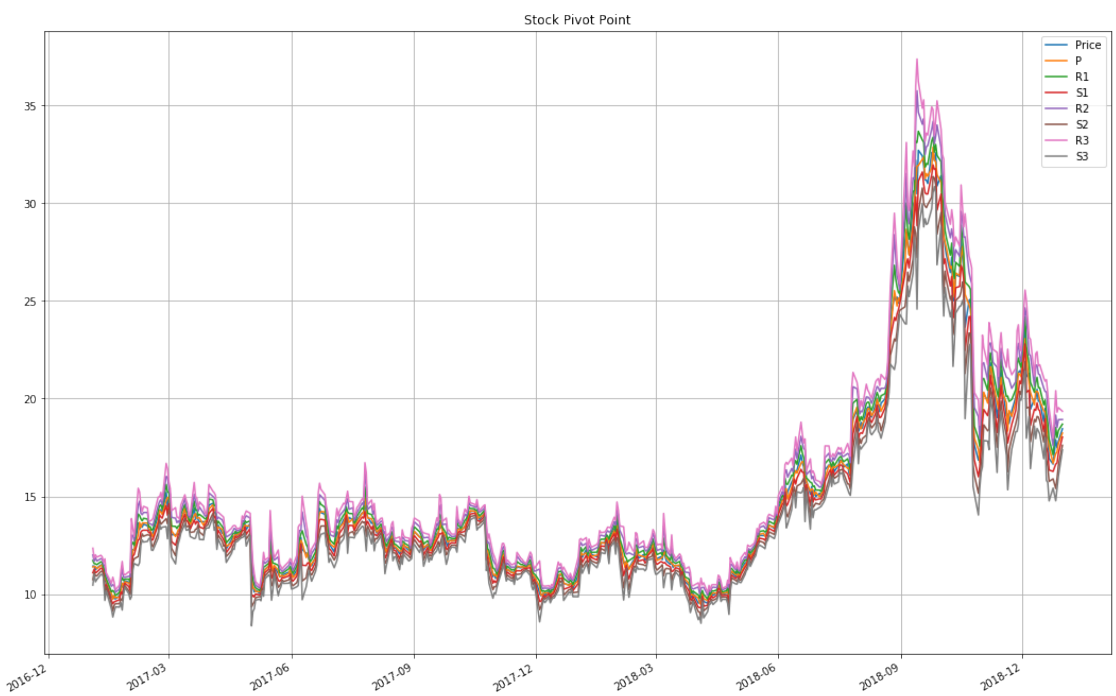
```
             Open   High    Low  Close  Adj Close    Volume   Returns  \
Date
2017-01-03  11.42  11.65  11.02  11.43      11.43  55182000       NaN
2017-01-04  11.45  11.52  11.24  11.43      11.43  40781200  0.000000
2017-01-05  11.43  11.69  11.23  11.24      11.24  38855200 -0.016623
2017-01-06  11.29  11.49  11.11  11.32      11.32  34453500  0.007117
2017-01-09  11.37  11.64  11.31  11.49      11.49  37128000  0.015018
```

```
                  P          R1          R2          R3     R4          R5  \
Date
2017-01-03  11.3800  11.713333  11.996667  12.343333  12.69  13.036667
2017-01-04  11.4100  11.553333  11.676667  11.833333  11.99  12.146667
2017-01-05  11.3975  11.543333  11.846667  12.003333  12.16  12.316667
2017-01-06  11.3025  11.503333  11.686667  11.883333  12.08  12.276667
2017-01-09  11.4525  11.650000  11.810000  11.980000  12.15  12.320000

                   S1          S2          S3     S4         S5
Date
2017-01-03  11.083333  10.736667  10.453333  10.17   9.886667
2017-01-04  11.273333  11.116667  10.993333  10.87  10.746667
2017-01-05  11.083333  10.926667  10.623333  10.32  10.016667
2017-01-06  11.123333  10.926667  10.743333  10.56  10.376667
2017-01-09  11.320000  11.150000  10.990000  10.83  10.670000
```

[5]:

```
# labels = ['Price','P','R1','S1','R2','S2','R3','S3']
pivot_point = pd.concat([dataset['Adj Close'],P,R1,S1,R2,S2,R3,S3],axis=1).
 ↪plot(figsize=(18,12),grid=True)
plt.title('Stock Pivot Point')
plt.legend(['Price','P','R1','S1','R2','S2','R3','S3'], loc=0)
plt.show()
```



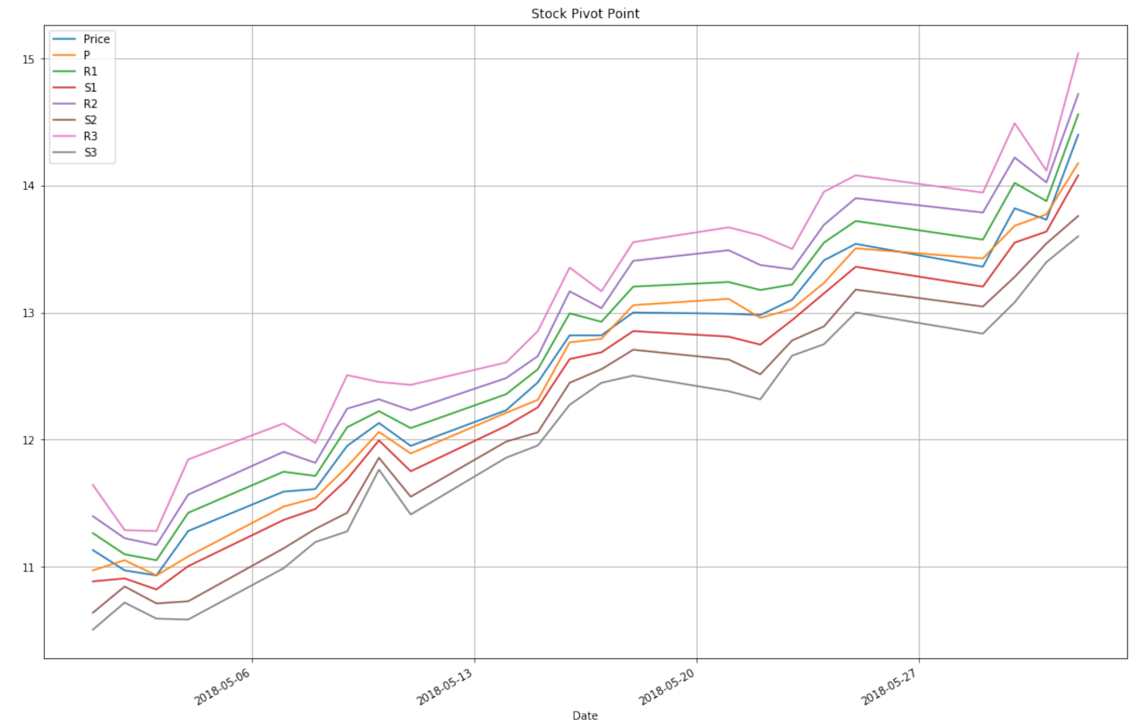
[6]:

```
dataset['Adj Close']['2018-05-01':'2018-06-01']
```

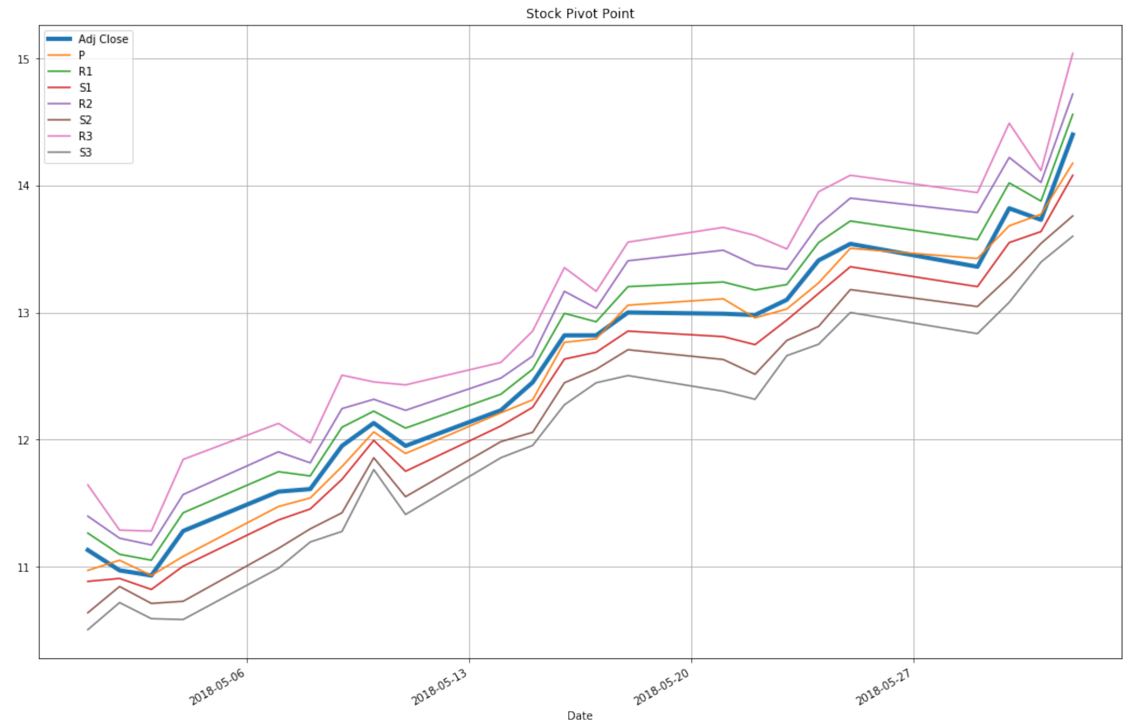
[6]:
```
Date
2018-05-01    11.13
2018-05-02    10.97
2018-05-03    10.93
2018-05-04    11.28
2018-05-07    11.59
2018-05-08    11.61
2018-05-09    11.95
2018-05-10    12.13
2018-05-11    11.95
2018-05-14    12.23
2018-05-15    12.45
2018-05-16    12.82
2018-05-17    12.82
2018-05-18    13.00
2018-05-21    12.99
2018-05-22    12.98
2018-05-23    13.10
2018-05-24    13.41
2018-05-25    13.54
2018-05-29    13.36
2018-05-30    13.82
2018-05-31    13.73
2018-06-01    14.40
Name: Adj Close, dtype: float64
```

[7]:
```
date_range = dataset[['Adj␣
↪Close','P','R1','S1','R2','S2','R3','S3']]['2018-05-01':'2018-06-01']# Pick␣
↪Date Ranges
```

[8]:
```
date_range.plot(figsize=(18,12),grid=True)
plt.title('Stock Pivot Point')
plt.legend(['Price','P','R1','S1','R2','S2','R3','S3'], loc=0)
plt.show()
```



[9]:
```
ax = date_range.plot(figsize=(18,12), grid=True)
ax.lines[0].set_linewidth(4) # Plot Specific Line
plt.title('Stock Pivot Point')
plt.legend()
plt.show()
```



2.2 Woodie's Pivot Points

[10]:
```
# Woodie's Pivot Points
P = pd.Series((dataset['High'] + dataset['Low'] + 2*dataset['Close']) / 4)
R1 = pd.Series(2 * P - dataset['Low'])
S1 = pd.Series(2 * P - dataset['High'])
R2 = pd.Series(P + dataset['High'] - dataset['Low'])
S2 = pd.Series(P - dataset['High'] + dataset['Low'])
wpp = {'P':P, 'R1':R1, 'S1':S1, 'R2':R2, 'S2':S2}
WPP = pd.DataFrame(wpp)
# dataset = dataset.join(WPP)
```

[11]:
```
WPP.head()
```

[11]:

Date	P	R1	R2	S1	S2
2017-01-03	11.3825	11.745	12.0125	11.115	10.7525
2017-01-04	11.4050	11.570	11.6850	11.290	11.1250
2017-01-05	11.3500	11.470	11.8100	11.010	10.8900
2017-01-06	11.3100	11.510	11.6900	11.130	10.9300
2017-01-09	11.4825	11.655	11.8125	11.325	11.1525

2.3 Camarilla's Pivot Points

[12]:
```
# Camarilla's Pivot Points
R1 = pd.Series((dataset['High'] - dataset['Low']) * 1.1 / (2+dataset['Close']))
R2 = pd.Series((dataset['High'] - dataset['Low']) * 1.1 / (4+dataset['Close']))
R3 = pd.Series((dataset['High'] - dataset['Low']) * 1.1 / (6+dataset['Close']))
R4 = pd.Series((dataset['High'] - dataset['Low']) * 1.1 / (12+dataset['Close']))
S1 = pd.Series((dataset['Close'] - (dataset['High']-dataset['Low']) * 1.1)/12)
S2 = pd.Series((dataset['Close'] - (dataset['High']-dataset['Low']) * 1.1)/6)
S3 = pd.Series((dataset['Close'] - (dataset['High']-dataset['Low']) * 1.1)/4)
S4 = pd.Series((dataset['Close'] - (dataset['High']-dataset['Low']) * 1.1)/2)
cpp = {'R1':R1, 'S1':S1, 'R2':R2, 'S2':S2, 'R3':R3, 'S3':S3,'R4':R4, 'S4':S4}
CPP = pd.DataFrame(cpp)
# dataset = dataset.join(CPP)
```

[13]:
```
CPP.head()
```

[13]:
```
                  R1        R2        R3        R4        S1        S2  \
Date
2017-01-03  0.051601  0.044913  0.039759  0.029577  0.894750  1.789500
2017-01-04  0.022934  0.019961  0.017671  0.013146  0.926833  1.853667
2017-01-05  0.038218  0.033202  0.029350  0.021773  0.894500  1.789000
2017-01-06  0.031381  0.027285  0.024134  0.017925  0.908500  1.817000
2017-01-09  0.026909  0.023434  0.020755  0.015453  0.927250  1.854500

                 S3      S4
Date
2017-01-03  2.68425  5.3685
2017-01-04  2.78050  5.5610
2017-01-05  2.68350  5.3670
2017-01-06  2.72550  5.4510
2017-01-09  2.78175  5.5635
```

2.4 Tom DeMark's

[14]:
```
# Tom DeMark's
dataset = yf.download(symbol,start,end)

h_l_c = dataset['Close'] < dataset['Open']
h_lc = dataset['Close'] > dataset['Open']
hl_c = dataset['Close'] == dataset['Open']
P = np.zeros(len(dataset['Close']))
P[h_l_c] = dataset['High'][h_l_c] + 2.0 * dataset['Low'][h_l_c] +␣
↪dataset['Close'][h_l_c]
P[h_lc] = 2.0 * dataset['High'][h_lc] + dataset['Low'][h_lc] +␣
↪dataset['Close'][h_lc]
```

```
P[hl_c] = dataset['High'][hl_c] + dataset['Low'][hl_c] + 2.0 *␣
↪dataset['Close'][hl_c]
S1 = P / 2.0 - dataset['High']
R1 = P / 2.0 - dataset['Low']
P = P / 4.0
tdm = {'P': P, 'S1': S1, 'R1': R1}
TDM = pd.DataFrame(tdm)
```

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

[15]:
```
TDM.head()
```

[15]:
```
                  P      R1      S1
Date
2017-01-03  11.4375  11.855  11.225
2017-01-04  11.3575  11.475  11.195
2017-01-05  11.3475  11.465  11.005
2017-01-06  11.3525  11.595  11.215
2017-01-09  11.5200  11.730  11.400
```

2.5 Fibonacci's Pivot Point

[16]:
```
# Fibonacci's Pivot Points
PP = pd.Series((dataset['High'] + dataset['Low'] + dataset['Close']) / 3)
R1 = pd.Series((PP + (dataset['High'] - dataset['Low']) * 0.382))
R2 = pd.Series((PP + (dataset['High'] - dataset['Low']) * 0.618))
R3 = pd.Series((PP + (dataset['High'] - dataset['Low']) * 1.000))
S1 = pd.Series((PP - (dataset['High'] - dataset['Low']) * 0.382))
S2 = pd.Series((PP - (dataset['High'] - dataset['Low']) * 0.618))
S3 = pd.Series((PP - (dataset['High'] - dataset['Low']) * 1.000))
fpp = {'PP':PP, 'R1':R1, 'S1':S1, 'R2':R2, 'S2':S2, 'R3':R3, 'S3':S3}
FPP = pd.DataFrame(fpp)
# dataset = dataset.join(CPP)
```

[17]:
```
FPP.head()
```

[17]:
```
                   PP         R1         R2         R3         S1         S2  \
Date
2017-01-03  11.366667  11.607327  11.756007  11.996667  11.126007  10.977327
2017-01-04  11.396667  11.503627  11.569707  11.676667  11.289707  11.223627
2017-01-05  11.386667  11.562387  11.670947  11.846667  11.210947  11.102387
2017-01-06  11.306667  11.451827  11.541507  11.686667  11.161507  11.071827
2017-01-09  11.480000  11.606060  11.683940  11.810000  11.353940  11.276060

                   S3
Date
2017-01-03  10.736667
```

```
2017-01-04   11.116667
2017-01-05   10.926667
2017-01-06   10.926667
2017-01-09   11.150000
```

2.6 Chicago Floor Trading Pivotal Point

https://www.fmlabs.com/reference/default.htm

[18]:
```
PP = pd.Series((dataset['High'] + dataset['Low'] + dataset['Close']) / 3)
R1 = pd.Series(PP * 2 - dataset['Low'].shift())
R2 = pd.Series(PP + (dataset['High'].shift() - dataset['Low'].shift()))
S1 = pd.Series(PP * 2 - dataset['High'].shift())
S2 = pd.Series(PP - (dataset['High'].shift() - dataset['Low'].shift()))
CFpp = {'PP':PP, 'R1':R1, 'S1':S1, 'R2':R2, 'S2':S2}
CFPP = pd.DataFrame(CFpp)
```

[19]:
```
CFPP.head()
```

[19]:

Date	PP	R1	R2	S1	S2
2017-01-03	11.366667	NaN	NaN	NaN	NaN
2017-01-04	11.396667	11.773333	12.026667	11.143333	10.766667
2017-01-05	11.386667	11.533333	11.666667	11.253333	11.106667
2017-01-06	11.306667	11.383333	11.766667	10.923333	10.846667
2017-01-09	11.480000	11.850000	11.860000	11.470000	11.100000