

ADXR

September 29, 2021

1 Average Directional Movement Rating (ADXR)

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

<https://www.linnsoft.com/techind/adxr-avg-directional-movement-rating>

<https://www.marketvolume.com/technicalanalysis/adxr.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 = '2018-12-31'

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

```
[3]: import talib as ta
```

```
[4]: df['ADX'] = ta.ADX(df['High'], df['Low'], df['Adj Close'], timeperiod=4)
```

```
[5]: n = 7
df['ADXR'] = (df['ADX'][n] + df['ADX'][n+7:]) / 2
df
```

```
[5]:
```

	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
2018-08-08	206.050003	207.809998	204.520004	207.250000	204.142532
2018-08-09	207.279999	209.779999	207.199997	208.880005	205.748108
2018-08-10	207.360001	209.100006	206.669998	207.529999	205.135254
2018-08-13	207.699997	210.949997	207.699997	208.869995	206.459793
2018-08-14	210.160004	210.559998	208.259995	209.750000	207.329651
2018-08-15	209.220001	210.740005	208.330002	210.240005	207.813995
2018-08-16	211.750000	213.809998	211.470001	213.320007	210.858459
2018-08-17	213.440002	217.949997	213.160004	217.580002	215.069290
2018-08-20	218.100006	219.179993	215.110001	215.460007	212.973755
2018-08-21	216.800003	217.190002	214.029999	215.039993	212.558609
2018-08-22	214.100006	216.360001	213.839996	215.050003	212.568481
2018-08-23	214.649994	217.050003	214.600006	215.490005	213.003418
2018-08-24	216.600006	216.899994	215.110001	216.160004	213.665680
2018-08-27	217.149994	218.740005	216.330002	217.940002	215.425140
2018-08-28	219.009995	220.539993	218.919998	219.699997	217.164825
2018-08-29	220.149994	223.490005	219.410004	222.979996	220.406982
2018-08-30	223.250000	228.259995	222.399994	225.029999	222.433319
2018-08-31	226.509995	228.869995	226.000000	227.630005	225.003342
2018-09-04	228.410004	229.179993	226.630005	228.360001	225.724899
2018-09-05	228.990005	229.669998	225.100006	226.869995	224.252090
2018-09-06	226.229996	227.350006	221.300003	223.100006	220.525604
2018-09-07	221.850006	225.369995	220.710007	221.300003	218.746384
2018-09-10	220.949997	221.850006	216.470001	218.330002	215.810654

2018-09-11	218.009995	224.300003	216.559998	223.850006	221.266953
2018-09-12	224.940002	225.000000	219.839996	221.070007	218.519043
...
2018-11-15	188.389999	191.970001	186.899994	191.410004	189.861435
2018-11-16	190.500000	194.970001	189.460007	193.529999	191.964279
2018-11-19	190.000000	190.699997	184.990005	185.860001	184.356339
2018-11-20	178.369995	181.470001	175.509995	176.979996	175.548157
2018-11-21	179.729996	180.270004	176.550003	176.779999	175.349792
2018-11-23	174.940002	176.600006	172.100006	172.289993	170.896118
2018-11-26	174.240005	174.949997	170.259995	174.619995	173.207260
2018-11-27	171.509995	174.770004	170.880005	174.240005	172.830338
2018-11-28	176.729996	181.289993	174.929993	180.940002	179.476135
2018-11-29	182.660004	182.800003	177.699997	179.550003	178.097382
2018-11-30	180.289993	180.330002	177.029999	178.580002	177.135223
2018-12-03	184.460007	184.940002	181.210007	184.820007	183.324753
2018-12-04	180.949997	182.389999	176.270004	176.690002	175.260513
2018-12-06	171.759995	174.779999	170.419998	174.720001	173.306473
2018-12-07	173.490005	174.490005	168.300003	168.490005	167.126862
2018-12-10	165.000000	170.089996	163.330002	169.600006	168.227890
2018-12-11	171.660004	171.789993	167.000000	168.630005	167.265732
2018-12-12	170.399994	171.919998	169.020004	169.100006	167.731934
2018-12-13	170.490005	172.570007	169.550003	170.949997	169.566956
2018-12-14	169.000000	169.080002	165.279999	165.479996	164.141220
2018-12-17	165.449997	168.350006	162.729996	163.940002	162.613678
2018-12-18	165.380005	167.529999	164.389999	166.070007	164.726440
2018-12-19	166.000000	167.449997	159.089996	160.889999	159.588348
2018-12-20	160.399994	162.110001	155.300003	156.830002	155.561188
2018-12-21	156.860001	158.160004	149.630005	150.729996	149.510544
2018-12-24	148.149994	151.550003	146.589996	146.830002	145.642090
2018-12-26	148.300003	157.229996	146.720001	157.169998	155.898438
2018-12-27	155.839996	156.770004	150.070007	156.149994	154.886688
2018-12-28	157.500000	158.520004	154.550003	156.229996	154.966034
2018-12-31	158.529999	159.360001	156.479996	157.740005	156.463837

	Volume	ADX	ADXR
Date			
2018-08-01	67935700	NaN	NaN
2018-08-02	62404000	NaN	NaN
2018-08-03	33447400	NaN	NaN
2018-08-06	25425400	NaN	NaN
2018-08-07	25587400	NaN	NaN
2018-08-08	22525500	NaN	NaN
2018-08-09	23469200	NaN	NaN
2018-08-10	24611200	48.968522	NaN
2018-08-13	25869100	50.063840	NaN
2018-08-14	20748000	50.885328	NaN
2018-08-15	28807600	52.075966	NaN

2018-08-16	28500400	58.827287	NaN
2018-08-17	35427000	66.438569	NaN
2018-08-20	30287700	72.580878	NaN
2018-08-21	26159800	69.583975	59.276248
2018-08-22	19018100	65.890704	57.429613
2018-08-23	18883200	64.797955	56.883238
2018-08-24	18476400	63.978393	56.473457
2018-08-27	20525100	67.337605	58.153063
2018-08-28	22776800	71.833979	60.401250
2018-08-29	27254800	76.796759	62.882640
2018-08-30	48793800	81.523030	65.245776
2018-08-31	43340100	85.149507	67.059014
2018-09-04	27390100	87.918047	68.443284
2018-09-05	33333000	78.026334	63.497428
2018-09-06	34290000	63.005630	55.987076
2018-09-07	37619800	53.477178	51.222850
2018-09-10	39516500	54.741706	51.855114
2018-09-11	35749000	45.521504	47.245013
2018-09-12	49278700	35.982886	42.475704
...
2018-11-15	46478800	63.598315	56.283418
2018-11-16	36928300	57.511882	53.240202
2018-11-19	41925300	57.653765	53.311143
2018-11-20	67825200	62.655003	55.811762
2018-11-21	31124200	66.405932	57.687227
2018-11-23	23624000	70.785541	59.877031
2018-11-26	44998500	74.608428	61.788475
2018-11-27	41387400	77.475594	63.222058
2018-11-28	46062500	58.339886	53.654204
2018-11-29	41770000	46.645701	47.807111
2018-11-30	39531500	35.971659	42.470090
2018-12-03	40802500	37.211645	43.090083
2018-12-04	41344300	30.179577	39.574049
2018-12-06	43098400	33.067980	41.018251
2018-12-07	42281600	37.388179	43.178350
2018-12-10	62026000	44.551965	46.760244
2018-12-11	47281700	44.694543	46.831532
2018-12-12	35627700	44.341281	46.654901
2018-12-13	31898600	41.283513	45.126017
2018-12-14	40703700	45.877429	47.422976
2018-12-17	44287900	51.785731	50.377126
2018-12-18	33841500	56.216957	52.592740
2018-12-19	49047300	63.155887	56.062204
2018-12-20	64773000	69.607873	59.288197
2018-12-21	95744600	75.504039	62.236281
2018-12-24	37169200	80.292100	64.630311
2018-12-26	58582500	66.908392	57.938457

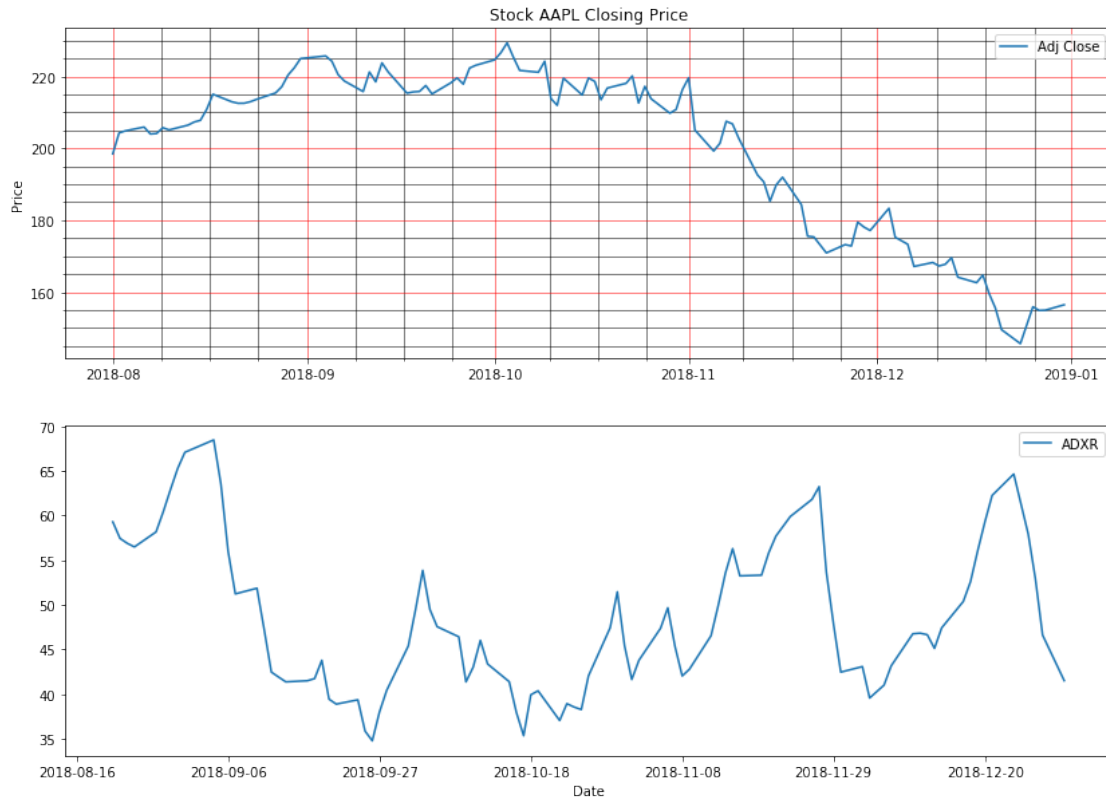
2018-12-27	53117100	56.870612	52.919567
2018-12-28	42291400	44.259007	46.613764
2018-12-31	35003500	34.065325	41.516923

[105 rows x 8 columns]

```
[6]: # Line Chart
fig = plt.figure(figsize=(14,10))
ax1 = plt.subplot(2, 1, 1)
ax1.plot(df['Adj Close'])
#ax1.grid(True, which='both')
ax1.grid(which='minor', linestyle='-', linewidth='0.5', color='black')
ax1.grid(which='major', linestyle='-', linewidth='0.5', color='red')
ax1.minorticks_on()
ax1.legend(loc='best')
ax1.set_title('Stock ' + symbol + ' Closing Price')
ax1.set_ylabel('Price')

ax2 = plt.subplot(2, 1, 2)
ax2.plot(df['ADX'], '-', label='ADX')
#ax2.text(s='Strong Trend', x=df['ADX'].index[0], y=50, fontsize=14)
#ax2.text(s='Weak Trend', x=df['ADX'].index[0], y=20, fontsize=14)
#ax2.axhline(y=50,color='r')
#ax2.axhline(y=20,color='r')
ax2.set_xlabel('Date')
ax2.legend(loc='best')
```

[6]: <matplotlib.legend.Legend at 0x1832668be80>



1.1 Candlestick with ADX

```
[7]: # Candlestick
dfc = df.copy()

from matplotlib import dates as mdates
import datetime as dt

dfc['ADX'] = ta.ADX(dfc['High'], dfc['Low'], dfc['Adj Close'], timeperiod=14)
dfc = dfc.dropna()
dfc.head()
```

```
[7]:
```

	Open	High	Low	Close	Adj Close	\
Date						
2018-09-10	220.949997	221.850006	216.470001	218.330002	215.810654	
2018-09-11	218.009995	224.300003	216.559998	223.850006	221.266953	
2018-09-12	224.940002	225.000000	219.839996	221.070007	218.519043	
2018-09-13	223.520004	228.350006	222.570007	226.410004	223.797409	
2018-09-14	225.750000	226.839996	222.520004	223.839996	221.257050	
	Volume	ADX	ADXR			

Date				
2018-09-10	39516500	62.531606	51.855114	
2018-09-11	35749000	59.716709	47.245013	
2018-09-12	49278700	57.256106	42.475704	
2018-09-13	41706400	55.642423	41.919362	
2018-09-14	31999300	54.124601	41.384405	

```
[8]: 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	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	ADX	ADXR	VolumePositive
0	67935700	NaN	NaN	False
1	62404000	NaN	NaN	True
2	33447400	NaN	NaN	False
3	25425400	NaN	NaN	False
4	25587400	NaN	NaN	False

```
[9]: 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.grid(which='minor', linestyle='-', linewidth='0.5', color='black')
#ax1.grid(which='major', linestyle='-', linewidth='0.5', color='red')
ax1.minorticks_on()
#ax1.legend(loc='best')
ax1.set_title('Stock ' + symbol + ' Closing Price')
ax1.set_ylabel('Price')

ax2 = plt.subplot(2, 1, 2)
```

```

ax2.plot(df['ADX'], '-', label='ADX')
#ax2.text(s='Strong Trend', x=df['ADX'].index[0], y=50, fontsize=14)
#ax2.text(s='Weak Trend', x=df['ADX'].index[0], y=20, fontsize=14)
#ax2.axhline(y=50,color='r')
#ax2.axhline(y=20,color='r')
ax2.set_ylabel('Average Directional Movement Rating')
ax2.set_xlabel('Date')
ax2.legend(loc='best')

```

[9]: <matplotlib.legend.Legend at 0x183267ede80>

