Stock_Adj_Sharpe_Ratio_Chart

September 29, 2021

1 Stock Adjusted Sharpe Ratio Chart

[1]:
```
# Library
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import scipy.stats as scs

import warnings
warnings.filterwarnings("ignore")

from pandas_datareader import data as pdr
import yfinance as yf
yf.pdr_override()
```

[2]:
```
start = '2016-01-01' #input
end = '2020-07-01' #input
symbol = 'AMD'
```

[3]:
```
df = yf.download("AMD", start, end)
```

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

[4]:
```
returns = df['Adj Close'].pct_change()[1:].dropna()
```

[5]:
```
# risk free
rf = yf.download('BIL', start=start, end=end)['Adj Close'].pct_change()[1:]
```

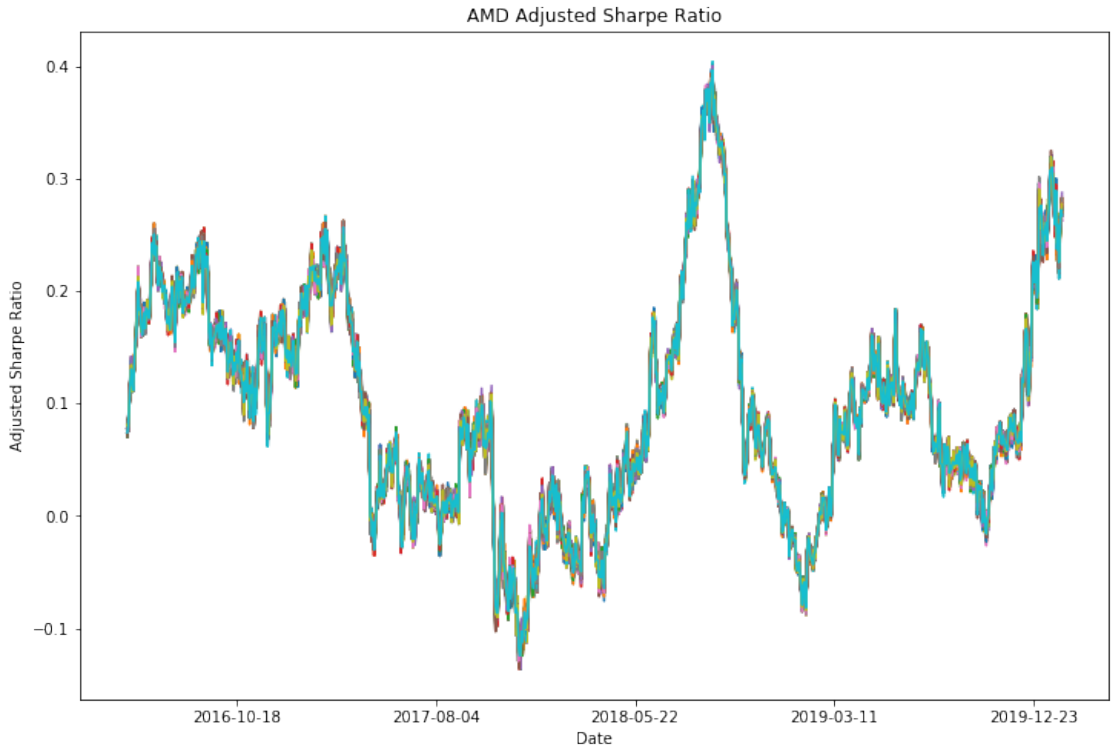
```
[**********************100%**********************]  1 of 1 completed
```

[6]:
```
def adj_sharpe_ratio(stock_returns, rf):
    sharpe_ratio = (stock_returns.mean() - rf) / stock_returns.std()
    stock_skewness = scs.skew(stock_returns)
    stock_kurtosis = stock_returns.kurtosis()
    Adj_SR = sharpe_ratio * (1 + (stock_skewness / 6.0) * sharpe_ratio +␣
 ↪(stock_kurtosis - 3) / 24.0 * sharpe_ratio**2)
    return Adj_SR
```

[7]:
```
# Compute the running Adjusted Sharpe ratio
running_sharpe = [adj_sharpe_ratio(returns[i-90:i], rf[i-90:i]) for i in␣
 ↪range(90, len(returns))]

# Plot running Adjusted Sharpe ratio up to 100 days before the end of the data␣
 ↪set
_, ax1 = plt.subplots(figsize=(12,8))
ax1.plot(range(90, len(returns)-100), running_sharpe[:-100])
ticks = ax1.get_xticks()
ax1.set_xticklabels([df['Adj Close'].index[int(i)].date() for i in ticks[:-1]])␣
 ↪# Label x-axis with dates
plt.title(symbol + ' Adjusted Sharpe Ratio')
plt.xlabel('Date')
plt.ylabel('Adjusted Sharpe Ratio')
```

[7]:
```
Text(0, 0.5, 'Adjusted Sharpe Ratio')
```



[8]:
```
adj_sharpe_ratio(returns, rf)
```

[8]:
```
Date
2016-01-05    0.085122
2016-01-06    0.096359
2016-01-07    0.079548
```

```
2016-01-08    0.085122
2016-01-11    0.085122
2016-01-12    0.079540
2016-01-13    0.090731
2016-01-14    0.090723
2016-01-15    0.085122
2016-01-19    0.079548
2016-01-20    0.085122
2016-01-21    0.079540
2016-01-22    0.096359
2016-01-25    0.079548
2016-01-26    0.090723
2016-01-27    0.079548
2016-01-28    0.085122
2016-01-29    0.079540
2016-02-01    0.096359
2016-02-02    0.085122
2016-02-03    0.079548
2016-02-04    0.079540
2016-02-05    0.085122
2016-02-08    0.090731
2016-02-09    0.079540
2016-02-10    0.090731
2016-02-11    0.079540
2016-02-12    0.090731
2016-02-16    0.085122
2016-02-17    0.085122
                 …
2020-05-19    0.085122
2020-05-20    0.085122
2020-05-21    0.082334
2020-05-22    0.087917
2020-05-26    0.082334
2020-05-27    0.087917
2020-05-28    0.085122
2020-05-29    0.085122
2020-06-01    0.082334
2020-06-02    0.085122
2020-06-03    0.085122
2020-06-04    0.085122
2020-06-05    0.090720
2020-06-08    0.082333
2020-06-09    0.085122
2020-06-10    0.082334
2020-06-11    0.090720
2020-06-12    0.079551
2020-06-15    0.085122
```

```
2020-06-16    0.085122
2020-06-17    0.085122
2020-06-18    0.087917
2020-06-19    0.085122
2020-06-22    0.085122
2020-06-23    0.085122
2020-06-24    0.085122
2020-06-25    0.082334
2020-06-26    0.087917
2020-06-29    0.085122
2020-06-30    0.085122
Name: Adj Close, Length: 1130, dtype: float64
```