Stock_Conditional_Value_at_Risk_Chart

September 29, 2021

1 Stock Conditional Value-At-Risk Chart

[1]:
```
# Library
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import math
import statistics

import warnings
warnings.filterwarnings("ignore")

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

[2]:
```
start = '2019-01-01' #input
end = '2020-07-01' #input
symbol = 'AMD' #input
```

[3]:
```
stocks = yf.download(symbol, start=start, end=end)['Adj Close']
```

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

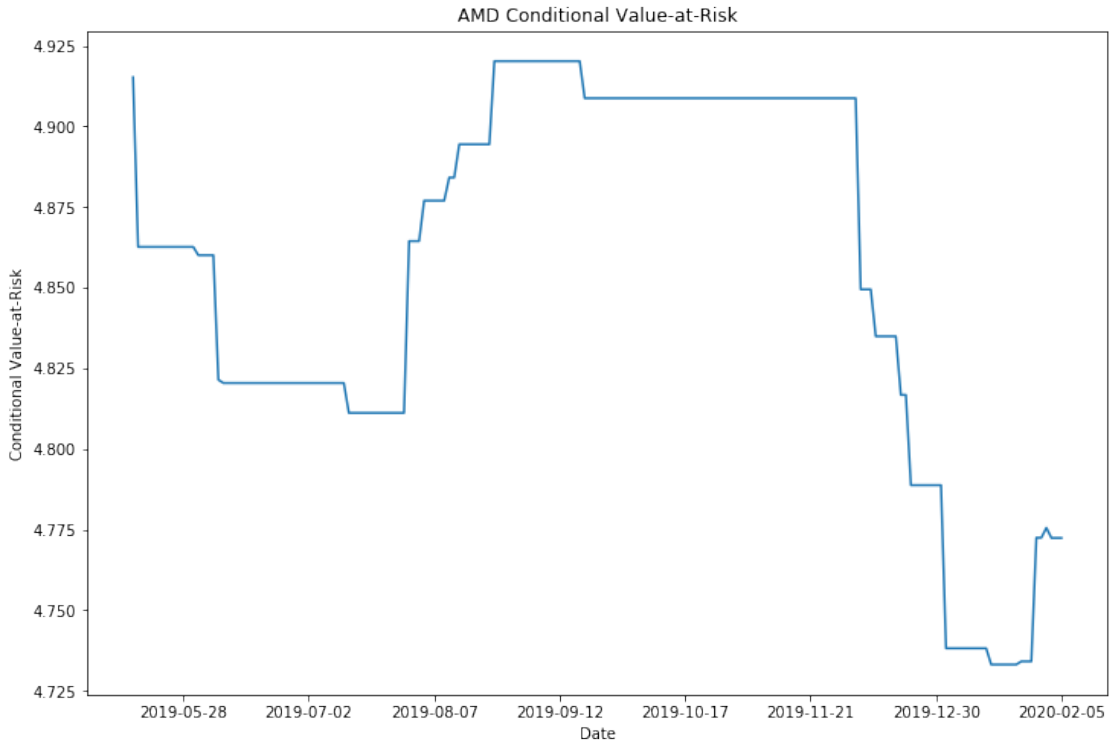
[4]:
```
stocks_returns = stocks.pct_change().dropna()
```

[5]:
```
def cvar(stock_returns):
    confidence_level = 0.05
    sortedReturns = sorted(stock_returns)
    CVaR = (1 - statistics.mean(sortedReturns[0:
 ↪int(len(sortedReturns)*confidence_level)])) * math.sqrt(252/12)
    return CVaR
```

[6]:
```
# Compute the running Conditional Value-at-Risk
running = [cvar(stocks_returns[i-90:i]) for i in range(90, len(stocks_returns))]
```

```
# Plot running Conditional Value-at-Risk up to 100 days before the end of the␣
 ↪data set
_, ax1 = plt.subplots(figsize=(12,8))
ax1.plot(range(90, len(stocks_returns)-100), running[:-100])
ticks = ax1.get_xticks()
ax1.set_xticklabels([stocks.index[int(i)].date() for i in ticks[:-1]]) # Label␣
 ↪x-axis with dates
plt.title(symbol + ' Conditional Value-at-Risk')
plt.xlabel('Date')
plt.ylabel('Conditional Value-at-Risk')
```

[6]: Text(0, 0.5, 'Conditional Value-at-Risk')



[7]:
```
stock_cvar = cvar(stocks_returns)
stock_cvar
```

[7]: 4.951004414657159

[8]:
```
running = [cvar(stocks_returns[i-90:i]) for i in range(90, len(stocks_returns))]
running
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