

Stock_Lower_Partial_Moment_Chart

September 29, 2021

1 Stock Lower Partial Moment 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 lpm(stock_returns):
    threshold=0.0
    order=1
    threshold_array = np.empty(len(stock_returns))
    threshold_array.fill(threshold)
    diff = threshold_array - stock_returns
    diff = diff.clip()
    return np.sum(diff ** order) / len(stock_returns)

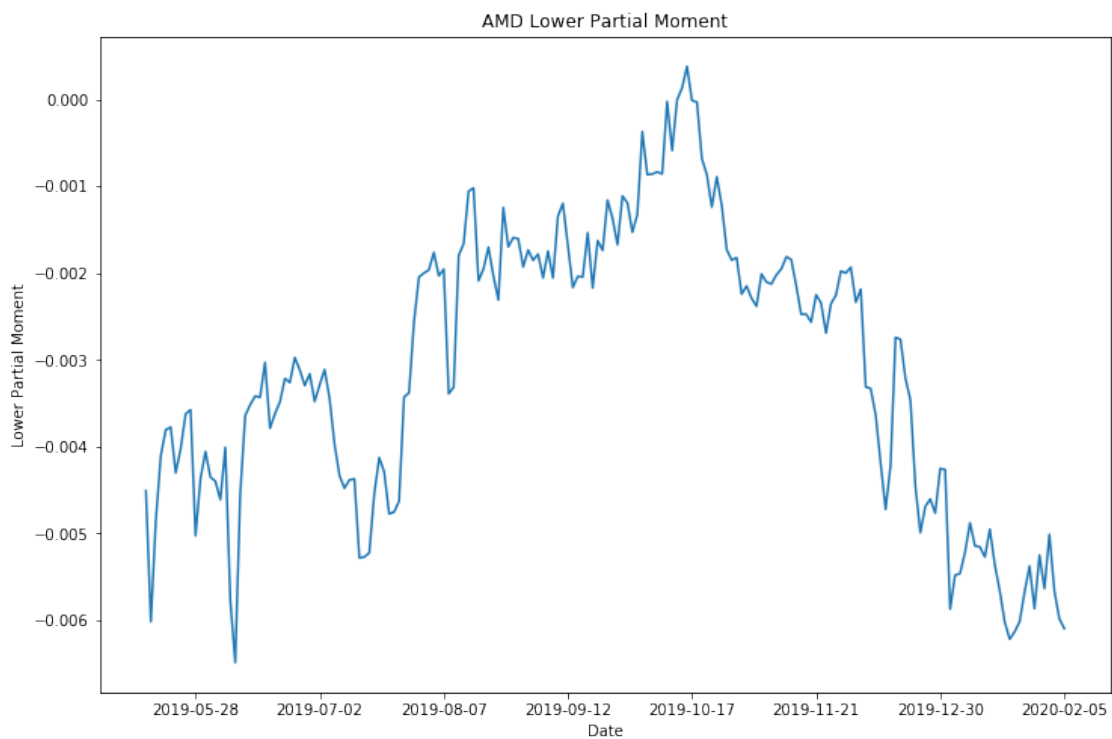
[6]: # Compute the running Lower Partial Moment
running = [lpm(stocks_returns[i-90:i]) for i in range(90, len(stocks_returns))]
```

```

# Plot running Lower Partial Moment 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 + ' Lower Partial Moment')
plt.xlabel('Date')
plt.ylabel('Lower Partial Moment')

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[6]: Text(0, 0.5, 'Lower Partial Moment')
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```
[7]: stock_lpm = lpm(stocks_returns)
stock_lpm
```

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[7]: -0.003408584638949311
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[8]: running = [lpm(stocks_returns[i-90:i]) for i in range(90, len(stocks_returns))]
running
```

[8]: [-0.004507735034667003,
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