DUAL-TICKER PORTFOLIO ASSESSOR

Rice University FinTech BootCamp

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AGENDA

Introductions/Objective/User Input (Parag)

Quantitative Analysis (Bolaji)

Financial Forecasting (Onur)

CLI (code run)/Concluding Remarks (Parag)

Questions

MOTIVATION

OBJECTIVE

To be able to compare returns on 2 stocks after financial analysis for a sound (preliminary) investment decision (before taking a deep dive) and further consulting a certified financial advisor

USER INPUT

CLI Inputs:

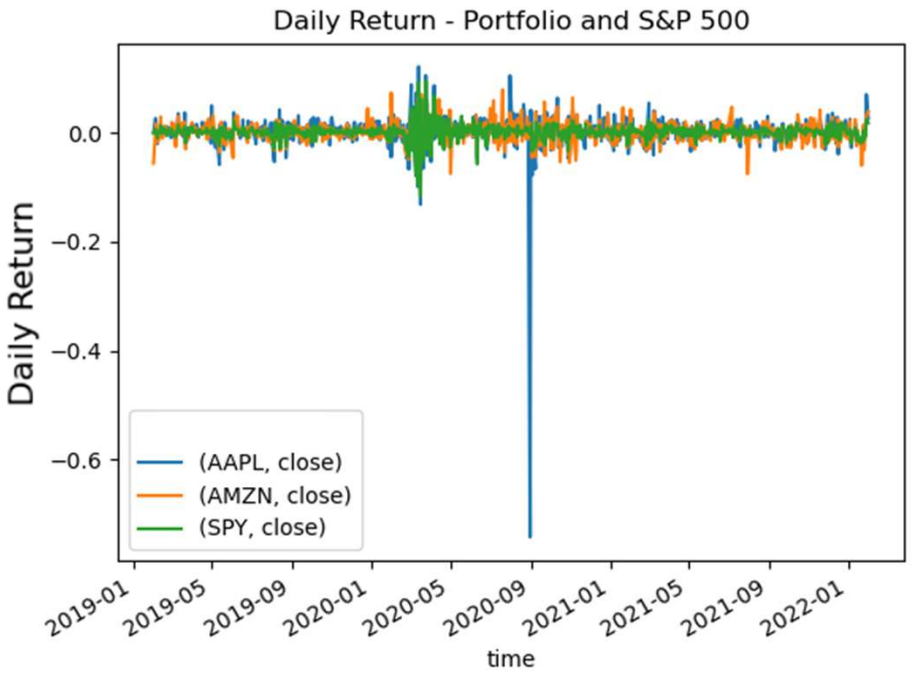
- Stock1 ticker (AAPL)
- Stock2 ticker (AMZN)
- Ratio/weight for Stock1 (0.5)
- Ratio/weight for Stock2 (0.5)
- Investment ($10,000)

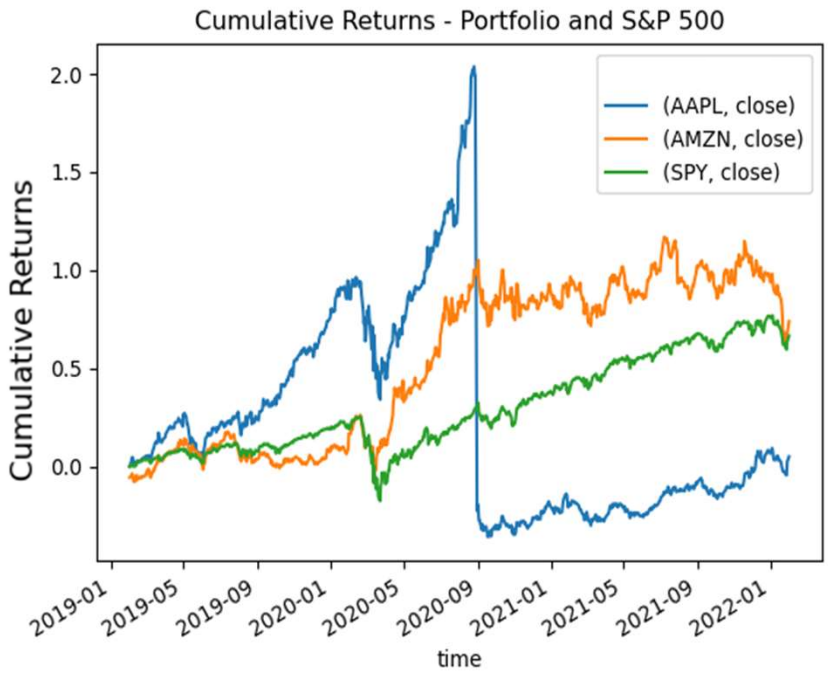
(Although our program gives a guidance on selection of stocks, it will work for any 2 stocks as long as they are supported in Alpaca library)

ASSUMPTIONS

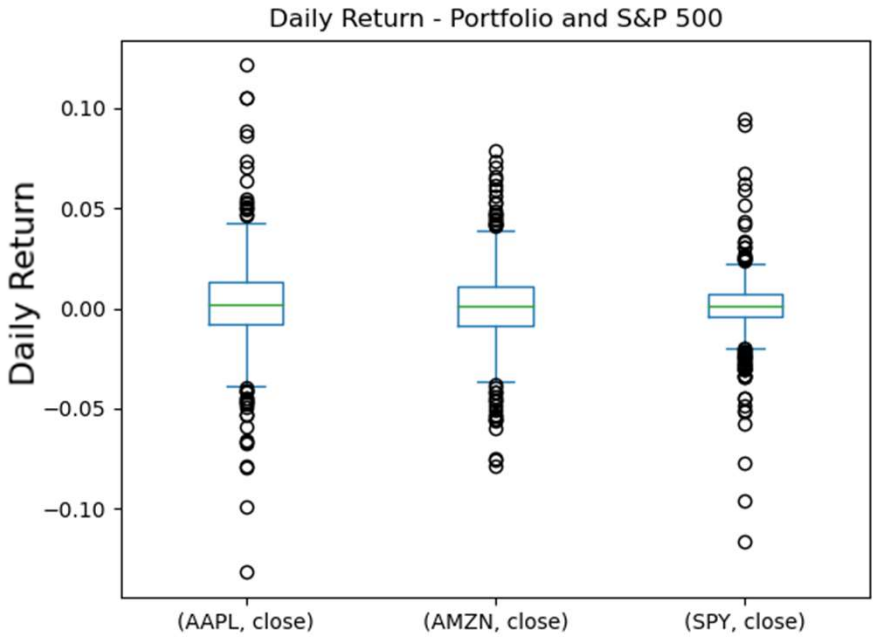
- Quantitative analysis based on 3 years of historical data (01/31/2019 to 01/31/2022)
- Financial forecasting analysis based on 3-yr MCSimulation
- For the weights parameter, user must list the weight of each asset in the order that the assets appear in the DataFrame (hence enter the stock ticker in alphabetical order e.g. AAX should be before AAY and so on)

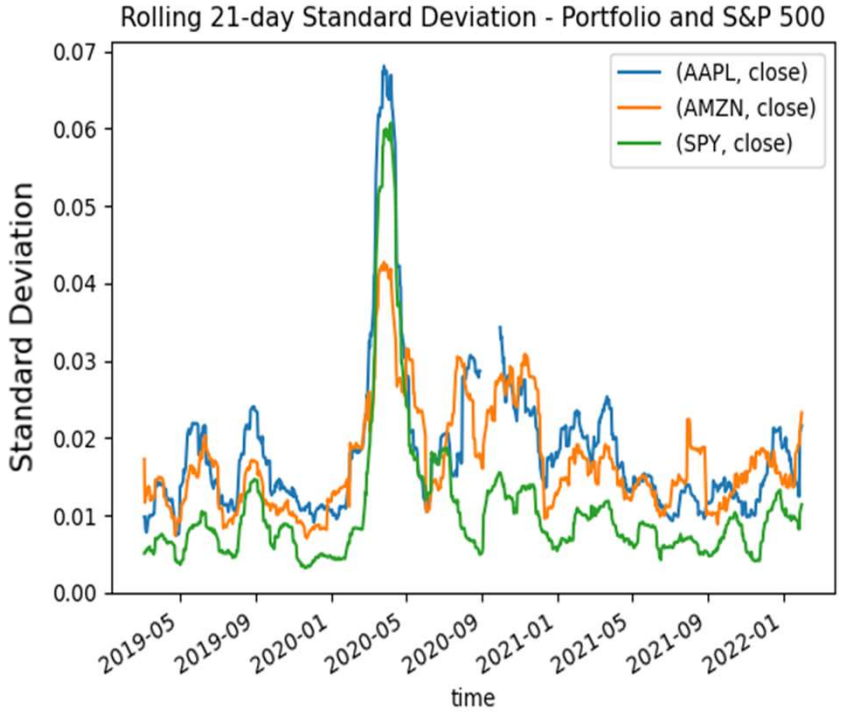
DAILY RETURNS & CUMULATIVE RETURNS



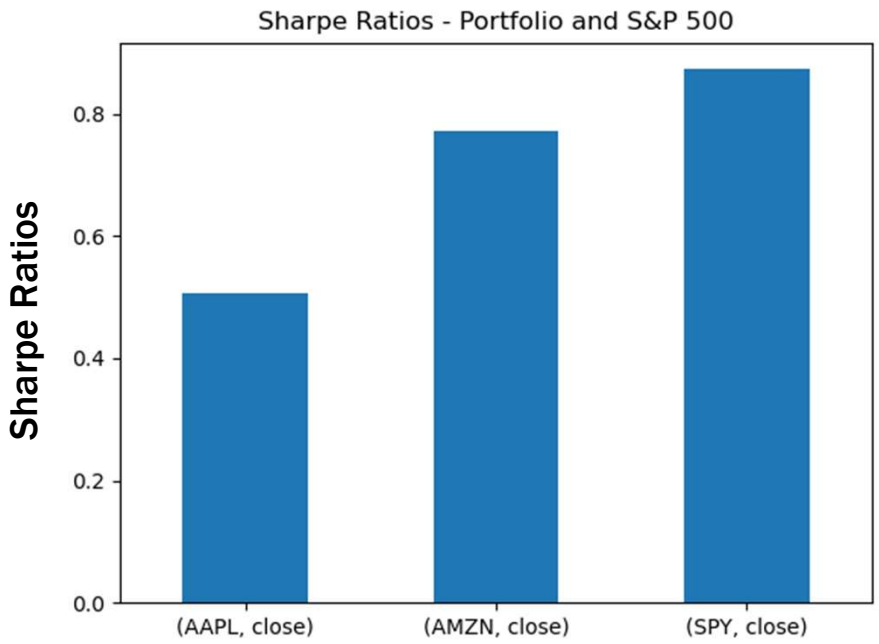


DAILY RETURN PLOT BOX AND STANDARD DEVIATION





SHARPE RATIOS



QUANTITATIVE ANALYSIS INSIGHTS

- Dip in Apple (AAPL) stock is due to split of shares
- Amazon (AMZN) stock has performed better than AAPL during last 3 years data
- Sharpe ratio shows the gain in relation to the risk
- Returns have gone higher for both stocks after Covid pandemic.

ISSUES

New Library Used: “DataReader”

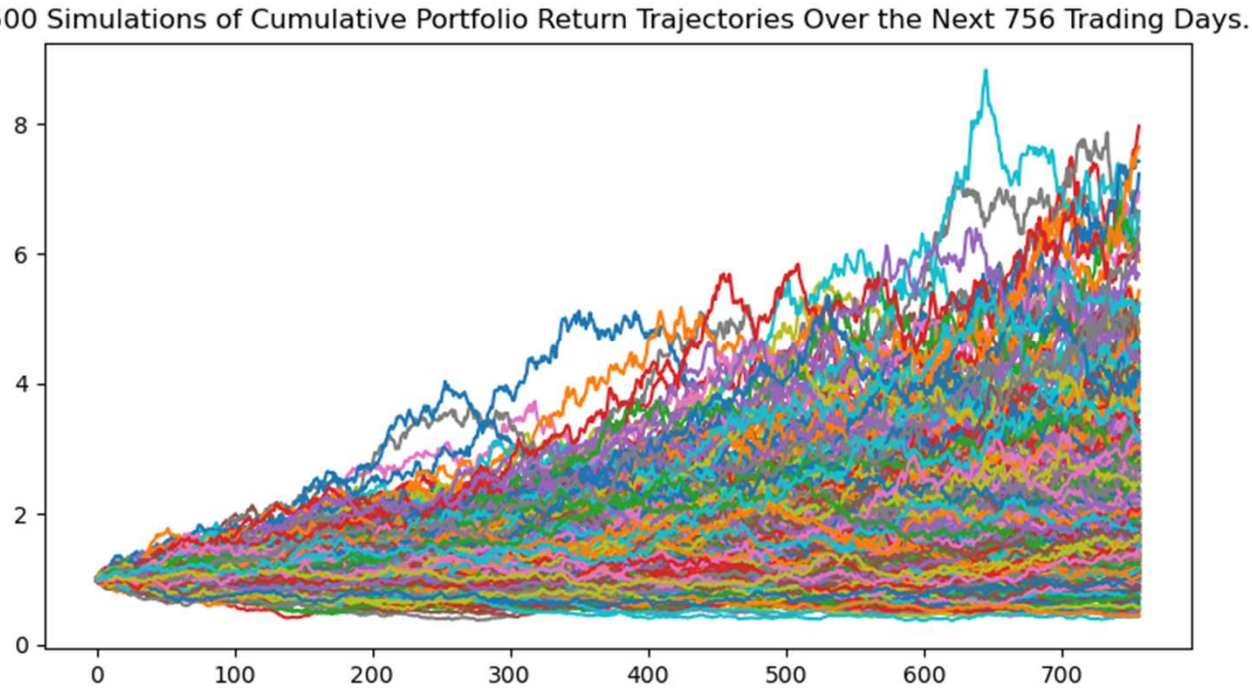
- Running MCs Simulations

RESOLUTION:

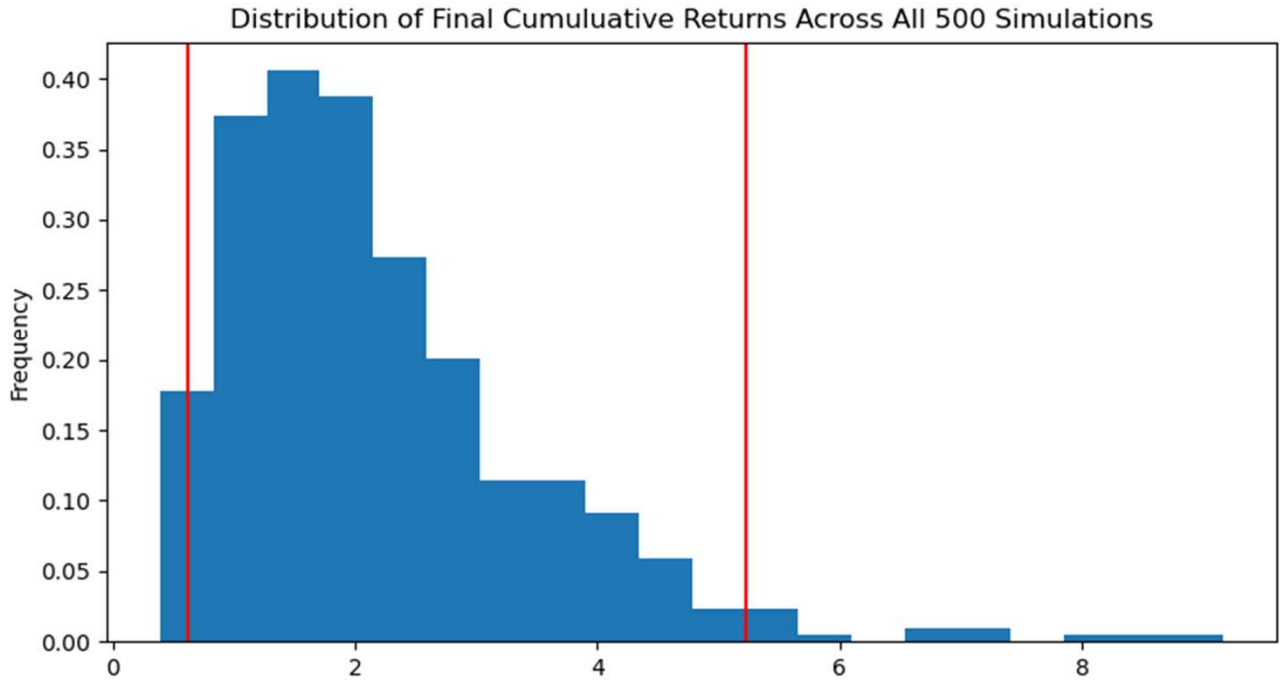
- ALPACA KEY To Load Data

MONTE CARLO SIMULATION

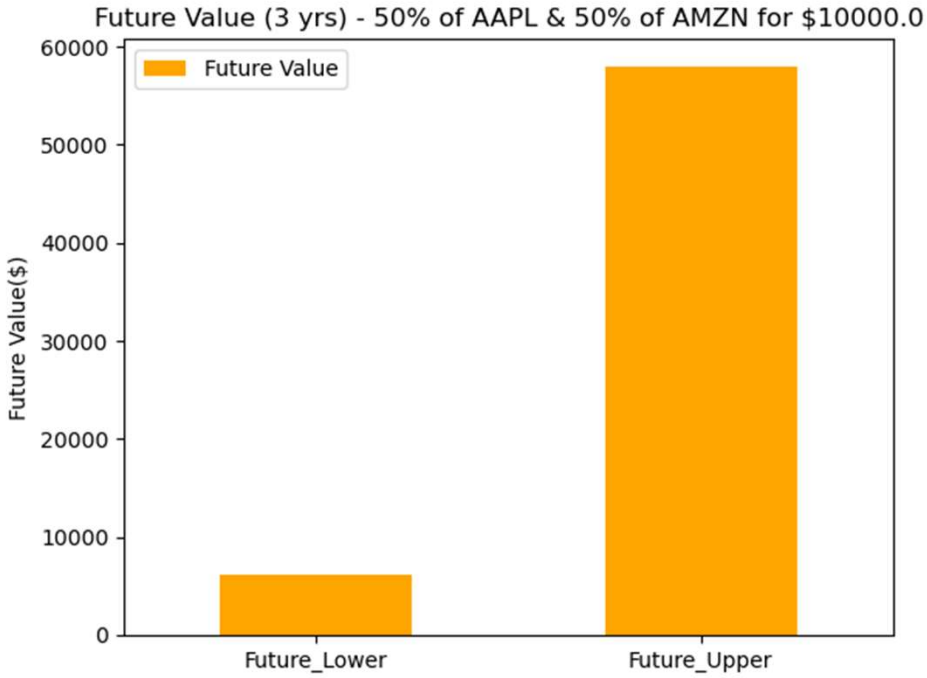
- Number of Simulations = 500
- Number of days = 3 * 252 = 756 (3 years)
- 50% AAPL & 50% AMZN



DISTRIBUTION OF CUMULATIVE RETURNS



FUTURE VALUE



There is a 95% chance that the current stock/bond portfolio value of $10,000.00 over the next 3 years will end within the range of $6,170.55 and $57,919.87.

BOKEH LIBRARY

What: Bokeh is **a data visualization library in Python** that provides high-performance interactive charts and plots

Why: How do I get my interactive Holoviews graph to display in Visual Studio (without Jupyter)?

How:

```
import holoviews as hv

# setting bokeh as backend
hv.extension('bokeh')

# use show() to open plot in browser
From bokeh.plotting import show
```

FUTURE STEPS

- Although our program gives a guidance on selection of stocks, it will work for any 2 stocks as long as they are supported in Alpaca library
- The program can further developed to include multiple (2 or more) stocks for more investment selections
- The program can be converted into web-based interactive application in future

QUESTIONS

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