

Wallstreet Club

Greetings,

Quant Finance has long been misrepresented on this campus and this competition aims to clear that misconception. This competition involves various problems which tries to capture the essence of Quant Finance.

Data : Download Data from Quandl for the last 15 years for the following stocks: Vedanta, Bajaj Financial Services , ITC, Titan and Tech Mahindra. Take last date as 20180531. Use the API to query the data, otherwise you can download the data and read but we prefer the former.

Problems:

Q1. Using the above 5 stocks to construct a portfolio of 50,00,000 Rs. The weights of each stock in the Portfolio has to be calculated according to the Lot Size of that Scrip. For Example weight of ITC would be : Lot Size of ITC/ Sum of all Lot Sizes. Calculate the Daily PNL of this portfolio and plot it since the last 10 years. Also calculate the Value at Risk (known as VaR, defined below) for 90% over a rolling window of 5 years for the last 10 years. Basically along with the PNL, there should be a column of 90 percentile VaR values for the last 10 years of data.

Q2. For the above stocks ,calculate the number of Moving Average Crossovers for the last 5 years and the exact dates on which they occurred. The two moving averages need to be parameterized to m and n respectively. ($m > n$). Also plot the moving averages over the time period of last 5 years along with the close prices.

Q3. For the above stocks, calculate the maximum drawdown in the last 10 years. Drawdown is defined as the Equity Peak (Maximum Cumulative PNL till now) minus the cumulative PNL till date divided by Equity Peak. Also plot the Underwater Graph (See figure). It is calculated by

plotting the drawdown of that day.



Rules and Guidelines:

1. Any programming language can be used. Hint: Use Pandas library in Python for data wrangling and Matplotlib for visualization.
2. Don't hardcode and keep the code modularized.
3. The competition starts on '01/07/2018 00:00:00' and ends at '14/07/2018 23:59:59'.
4. You will be judged on the accuracy, time and elegance of the code. PS: Excel is the least elegant one can be. :P
5. Please submit your code along with the required Output saved in a CSV format and the figures saved as PNG. Zip it into a single file and mail it to wsc.bitsgoa@gmail.com and CC the CoCo members. Keep the subject of the mail as 'Quant Competition 07/18'

Prizes:

1. The top 5 winners of this competition get a pizza treat from the CoCo members post vacation.
2. A select number of top performers will be inducted into the Quant Wing of Wall Street Club.

Best of luck and give it your best shot! At the end of this competition you would have developed some actual Quant Finance skills and that is what is most important.

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