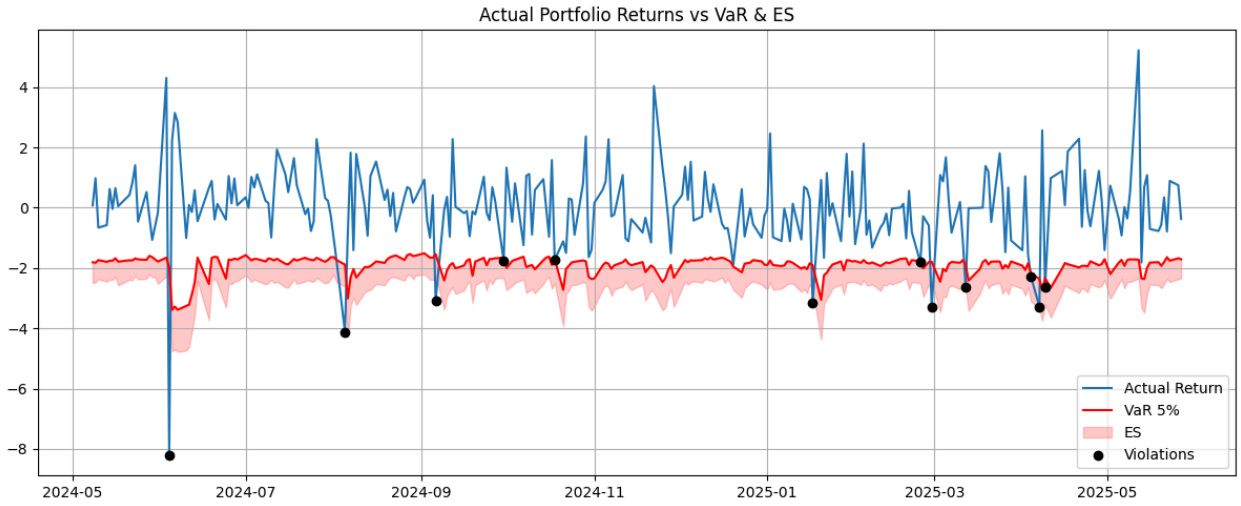
I have ran the backtesting by taking window stepsize of 1 such that we will have var for consecutive days.keeping time in mind i have ran it on data from 2020 to 2025 . the results i have got are :

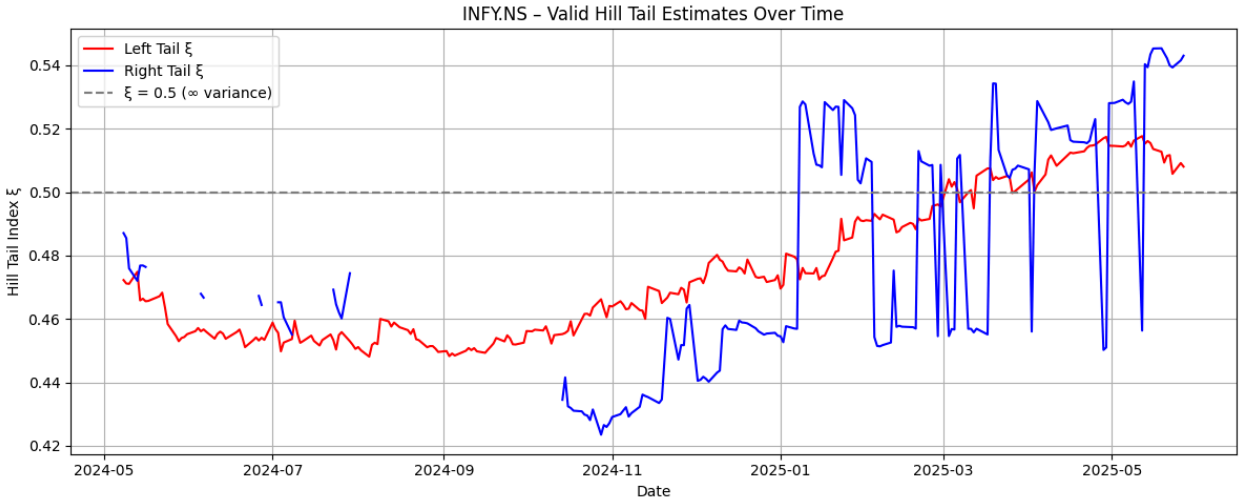
VaR violations: 12 / 261 (4.60%)
Kupiec Test p-value: 0.7563
Christoffersen p-value: 0.5683
Acerbi–Szekely ES stat: 2.0899
Acerbi–Szekely crit value 5 %: 1.6130
Acerbi–Szekely ES p-value: 0.6708
Mean Absolute ES Error: 1.0589
Empirical ES in % : -3.12%,
Acerbi-szekely critl val 95% : 2.455

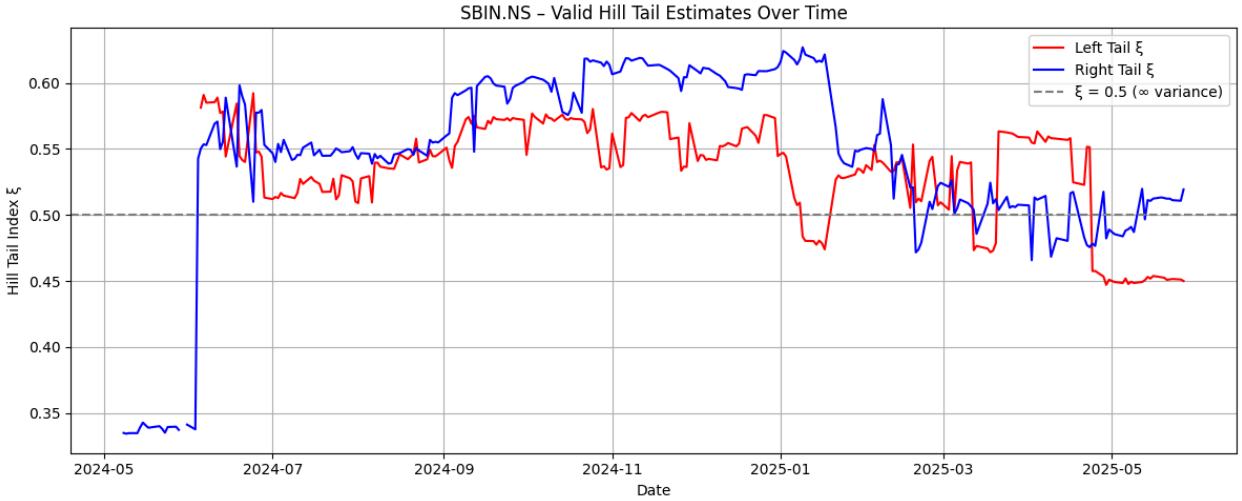
The statistic value is greater than critical value(acerbi szekely test) which is valid as this critical value is calculated at 5 % .it means we are not underestimating risk .the p value is greater than 0.05 so it is acceptable. The statistic value is lesser than critical value calculated at 95 percent .

The plot of actual returns vs var and ES :



Hill plots :





for hill plot we are taking lower tail data on which gpd is fitted whose proportion changes from window to window .this might be reason for no stability in hill plot

One doubt i am having is that is it ok to use kde for center , or lower tail plus center as we are assuming t distribution on residuals in garch model. I have tried with t distribution for center instead of kde but after fitting gpd on tail ,t on center i am unable to merge them properly . some spikes are forming which violates cdf monotonocity . as the results are good i have continued with kde till now.