Implementation:
    I have considered sbi and infosys returns from 2000 to 2025 and applied AR(1) GJR GARCH(1,1) with assumption residuals follow t distribution but as they are deviating from t distribution in tails i have applied gpd on tails only when there exists thresholds such that it passes ks test , Ad test and exceedences greater than 100 . for joining , copula is selected based on the the 3 conditions: GoF p>0.05 and $|λ̂−λ̂\_emp|≤0.05$ with 95% CI covering $λ̂\_emp$ and lowest out-of-sample ES loss .
        I have done backtesting on 2 assets and 4 assets for step size 1 and 10 and these are the results :
    Here i assumed baseline to be the model with only gaussian garch applied on returns and and copula for joint distribution to be gaussian .

step size 1 and 2 assets

	VaR violatio	kupiec_p	christoffer	acerbi_szekely_stat	acerbi_szekely_crit	acerbi_szekely_p	mae_es	empirical_es_loss
baseline	0.0444804	0.183049	0.960447	2.01734755	2.205014153	0.4272	0.785174	-3.34341
model	0.0501415	0.974273	0.925589	2.091169942	2.205014153	0.1574	0.799112	-3.29533

step size 1 and 4 assets

	VaR violatio	kupiec_p	christoffer	acerbi_szekely_stat	acerbi_szekely_crit	acerbi_szekely_p	mae_es	empirical_es_loss
baseline	0.0381143	0.049991	0.236937	1.861479787	2.344032096	0.8574	0.553125	-2.63056
model	0.0441324	0.36703	0.171484	1.834151917	2.323971916	0.8869	0.657732	-2.53462

stepsize 10 and 2 assets

	VaR violatio	kupiec_p	christoffer	acerbi_szekely_stat	acerbi_szekely_crit	acerbi_szekely_p	mae_es	empirical_es_loss
baseline	0.0241935	0.00817	0.584644	1.658681283	2.693548387	0.8815	1.203286	-3.60159
model	0.0322581	0.113798	0.464235	1.731504191	2.693548387	0.7995	1.113544	-3.27605

stepsize 10 and 4 assets

	VaR violatio	kupiec_p	christoffer	acerbi_szekely_stat	acerbi_szekely_crit	acerbi_szekely_p	mae_es	empirical_es_loss
baseline	0.0403226	0.438501	0.358218	1.879874312	2.693548387	0.7052	0.366633	-2.6984
model	0.0443548	0.665886	0.311148	1.879318055	2.693548387	0.6967	0.407992	-2.61003

Here as per results baseline model performing better than our model but sometimes even though it is performing well it is failing in kupic test . but our model is performing well both in kupic test and almost closer to baseline when mean absolute es error is considered .

Even though our model mae es error is lesser than baseline in onecase but it is greater than baseline lin 3 cases so reasons i am thinking are :
        1)I have checked for ks results on probability integral transforms (pit values) but they are greater than 0.05 so issue might not be here . i have smoothened out blending portions as well .

2)while modelling i have considered lags as returns only but not errors as arch package in python does not support modelling garch and lags as returns and errors together.so now modelling considering errors as lags may fix the issue .

3) while applying gpd to tails we have applied kde to tails when ever we couldn't find good thresholds so instead of applying kde to tails ,considering tails distribution as the ones that is modelled with garch previously would favour us

These are the possible cases i am thinking of and will work on based on your suggestions.   Or as the baseline model is not performing well in kupic tests so is it okay to move on with the model we have now, as it performing almost closer to baseline and better in kupic.

Link for results of backtesting :

https://drive.google.com/drive/folders/1ej_vQujXA009LTLoRAeq9xwE9xom7GUu?usp=sharing