Market Risk Project

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In addition to the notebook provided with all the explanations, here are the main results obtained during the project

List of All Results

Here are the results obtained in this project :

$$\mathrm{VaR}_{95\%} = -0.0401905346246 47445$$

$$\text{Proportion above threshold} = 0.9824046920821115 > 0.95.$$

$$\hat{\mu}_w = -0.0062364934465 61692, \quad \hat{\sigma}_w = 0.0245635361811459$$

$$\text{Call Premium } 95\% = 0.14057809326000206$$

$$\xi^P_{\text{losses}} = -0.30172719722799335, \quad \xi^P_{\text{gains}} = 0.06277031346758448$$

$$\hat{\gamma}_n = 1829.9192061070537,$$
$$\hat{\eta}_n = 2.624116610713045 \cdot 10^{-8},$$
$$R^2 = 0.9193.$$

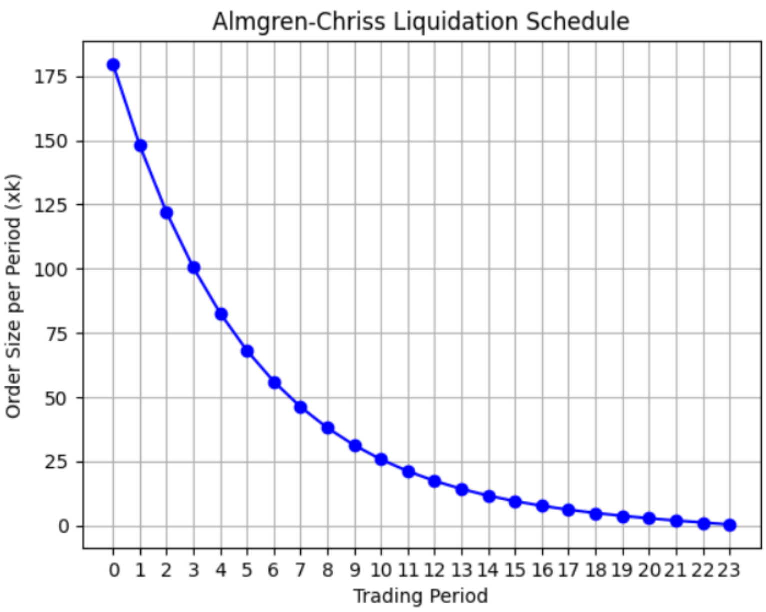

Figure 1: Almgren-Chriss Liquidation Schedule

Level	CAD/EUR-GBP/EUR	CAD/EUR-SEK/EUR	GBP/EUR-SEK/EUR
1	-0.226949	-0.135290	0.814780
2	-0.227190	-0.135506	0.814931
3	-0.227569	-0.135822	0.815184
4	-0.228495	-0.136924	0.815621
5	-0.229264	-0.137762	0.816206
6	-0.232206	-0.139938	0.817475
7	-0.241440	-0.151158	0.820864
8	-0.246501	-0.153196	0.825356
9	-0.274767	-0.183006	0.833338
10	-0.316037	-0.270196	0.854566
11	-0.493993	-0.398831	0.892320
12	-0.843762	-0.982279	0.929403

Table 1: Multi-level correlations between currency pairs

Hurst exponent and volatilities annualized:

- $H_{CAD/EUR} \approx 0.66$, $\sigma_{CAD/EUR} \approx 0.014$
- $H_{GBP/EUR} \approx 0.67$, $\sigma_{GBP/EUR} \approx 0.018$
- $H_{SEK/EUR} \approx 0.65$, $\sigma_{SEK/EUR} \approx 0.0089$