GARCH Volatility Forecasting Report – CBRE

Period analyzed: 1y | Model: GARCH(1,1) | Forecast horizon: 7 trading days

1. Objective

Forecast short-term stock return volatility using a GARCH(p,q) model and provide clear visuals for upcoming risk. Where possible, evaluate forecast quality against a simple EWMA(0.94) benchmark using QLIKE loss (lower is better).

2. Data

Data source: Yahoo Finance (adjusted close). Returns are daily log returns expressed in percent. Volatility figures shown are daily standard deviations in percent.

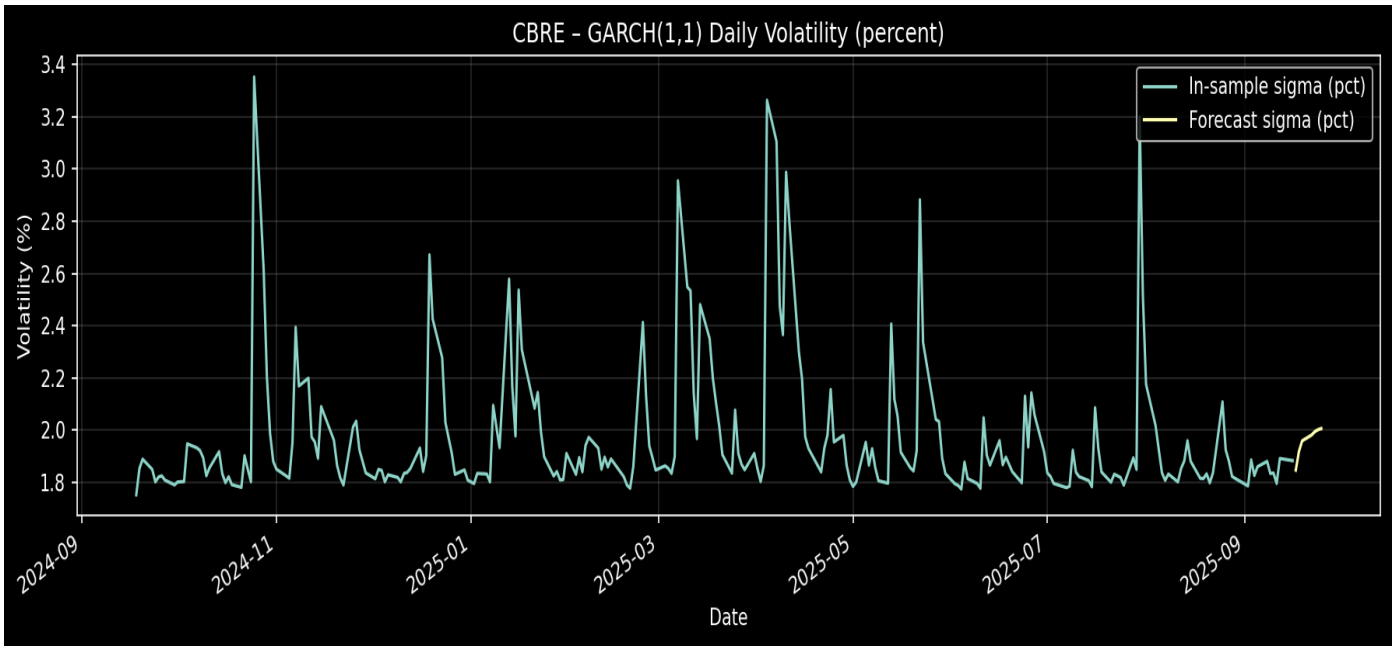
3. Model Selection

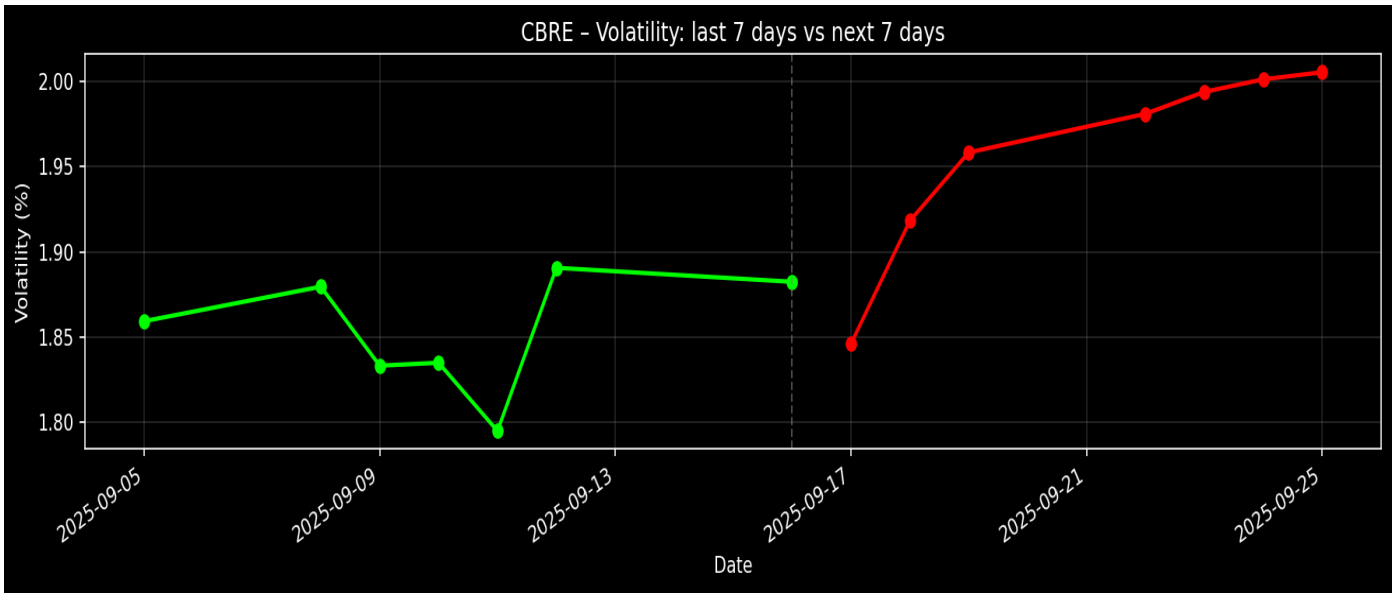
Model orders (p,q) guided by ACF/PACF diagnostics of (squared) returns and BIC search. Chosen specification: GARCH(1,1).

4. Forecasts

Date	In-sample daily vol (%)
2025-09-09	1.833%
2025-09-10	1.835%
2025-09-11	1.795%
2025-09-12	1.891%
2025-09-16	1.882%

Date	Forecast daily vol (%)
2025-09-17	1.846%
2025-09-18	1.918%
2025-09-19	1.958%
2025-09-22	1.981%
2025-09-23	1.994%
2025-09-24	2.001%
2025-09-25	2.005%

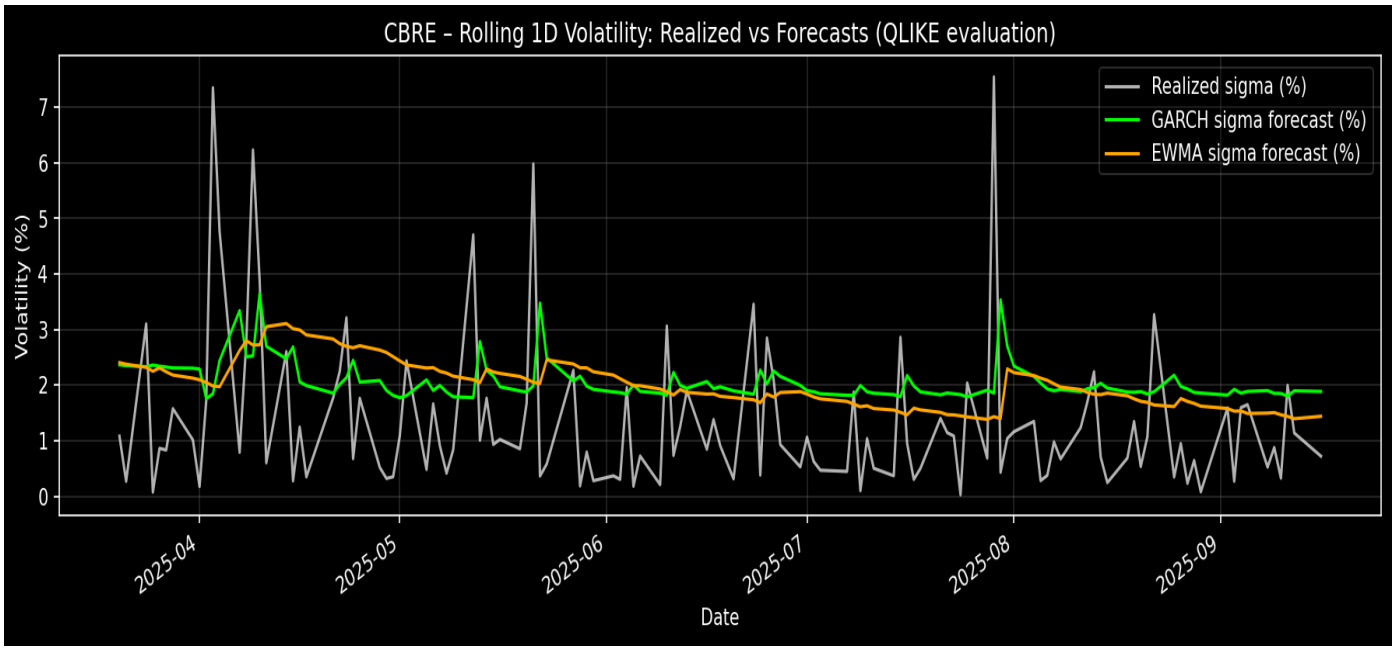




5. Backtest (1-day ahead, QLIKE)

Rolling re-fit with 1-day-ahead variance forecasts. Benchmark: EWMA(0.94). Evaluation metric: QLIKE

Metric	GARCH	EWMA(0.94)
Average QLIKE	-6.863119	-6.844951



6. Takeaways

Predicted volatility (next days): 2025-09-17: 1.846%; 2025-09-18: 1.918%; 2025-09-19: 1.958%.
GARCH outperformed EWMA on QLIKE (-6.863119 vs -6.844951).
GARCH provides time-varying daily volatility estimates useful for risk sizing, derivatives, and portfolio optimisation. Forecasts are in daily %; results depend on asset and lookback window.