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MARKOV SHADOW SIMULATION REPORT
Period: 2025-02-20 to 2025-03-05
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VOLATILITY ENERGY:
  Real Vol: 0.000549
  Sim Vol:  0.000539
  (Ratio: 0.98x)

TAIL RISK (CRASH CAPTURE):
  Real VaR (99%): -0.1429%
  Sim VaR (99%):  -0.1474%
  Real CVaR:      -0.2070%
  Sim CVaR:       -0.2220%

DISTRIBUTION & DRAWDOWN:
  Real Kurtosis: 29.11
  Sim Kurtosis:  60.51
  Real MDD: -6.84%
  Sim Avg MDD: -3.80%

HEALTH CHECK:
  Final Z-Score: -1.71
  KS Test P-Val: 0.0000

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APPENDIX: MODEL PARAMETERS
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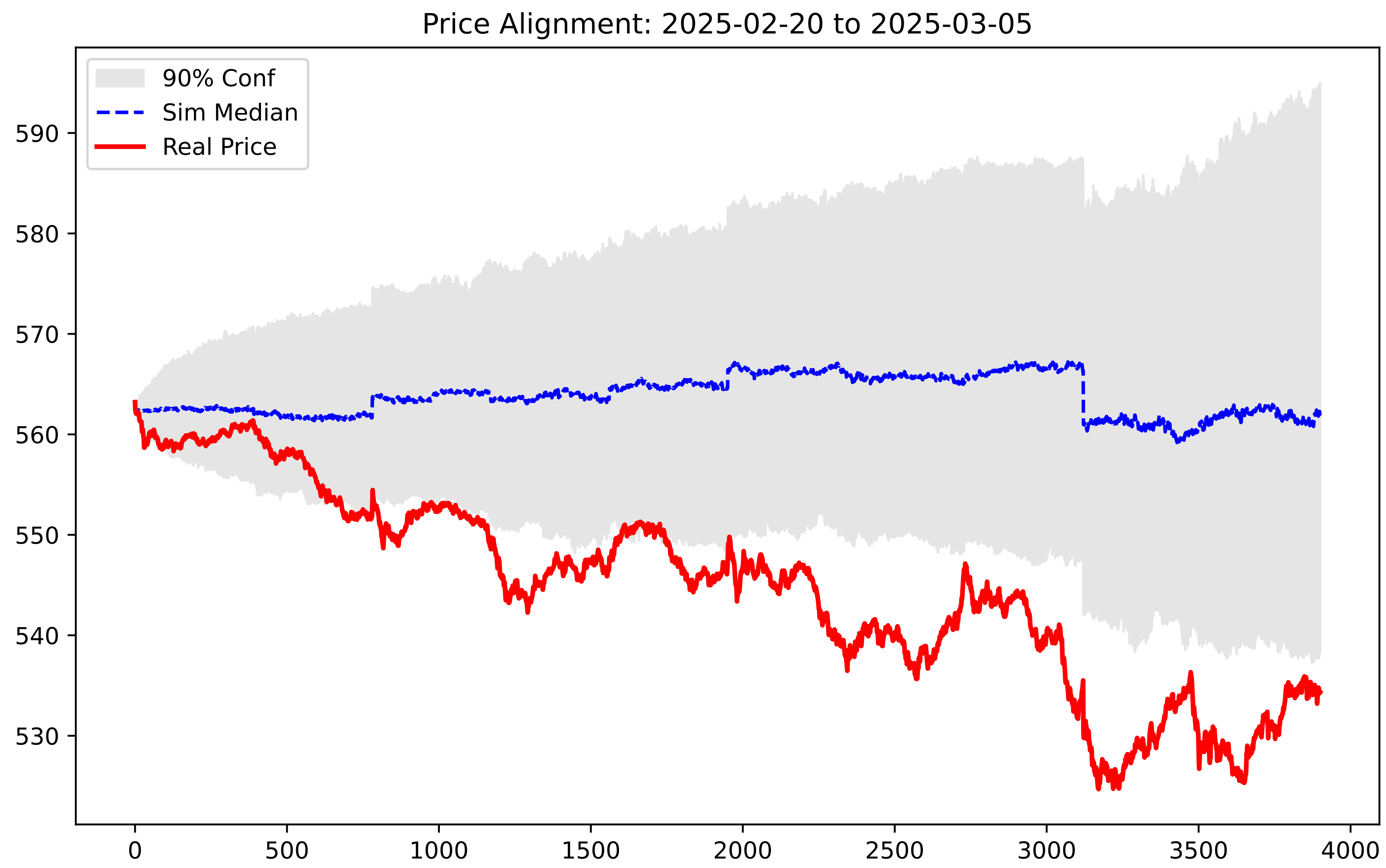
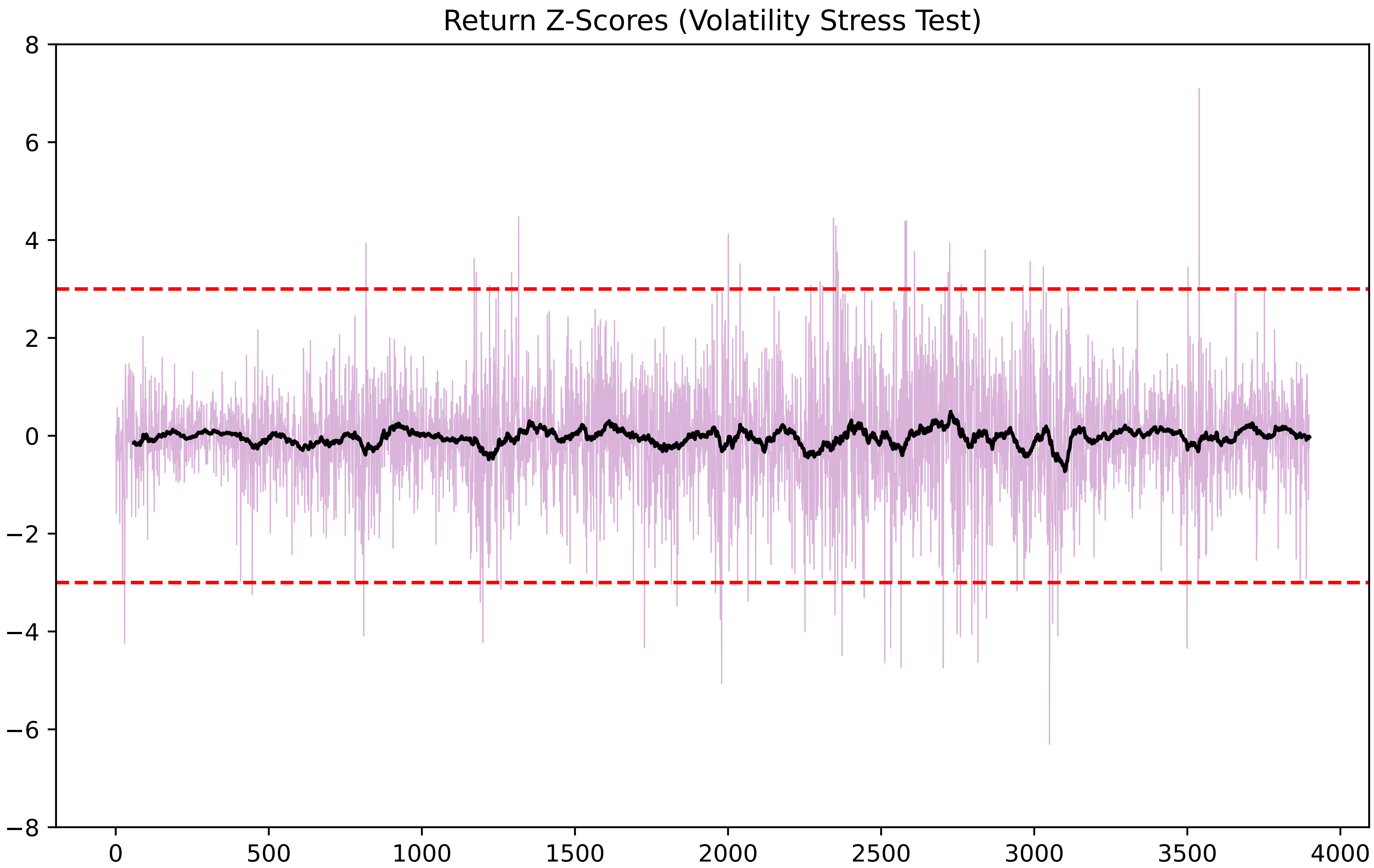
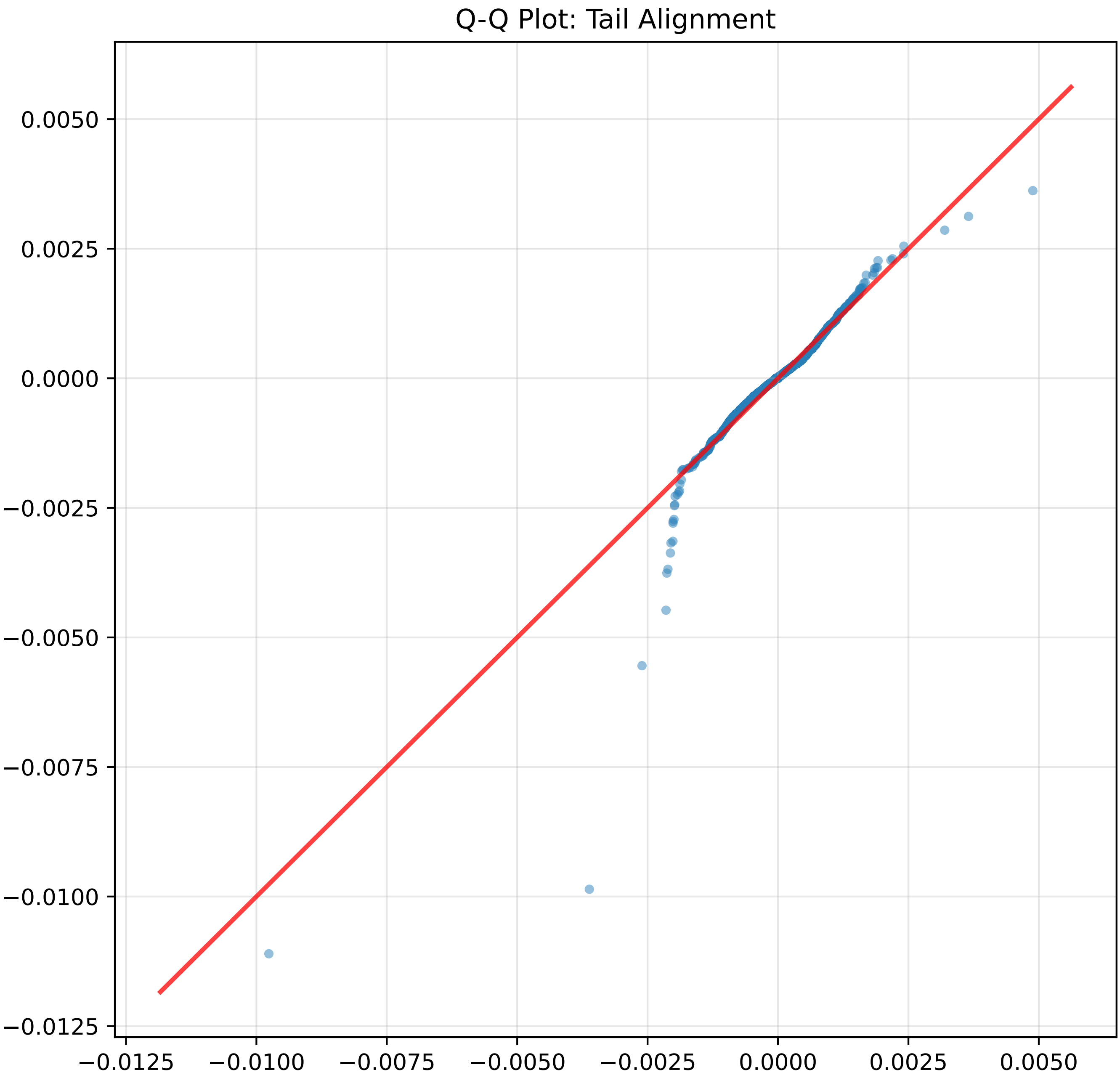
  Start Date: 2025-02-20
  End Date: 2025-03-05
  Lookback Years: 6
  N Days Simulated: 10
  EWMA Span: 390
  Threshold Low: 0.004
  Threshold High: 0.015
  Threshold Extreme: 0.025
  Jitter: 0.001
  Zero Threshold: 1e-05
  N Simulations: 200
```



Price Alignment: 2025-02-20 to 2025-03-05
90% Conf
Sim Median
Real Price
590
580
570
560
550
540
530
0
500
1000
1500
2000
2500
3000
3500
4000


Return Z-Scores (Volatility Stress Test)
8
6
4
2
0
−2
−4
−6
−8
0
500
1000
1500
2000
2500
3000
3500
4000


Q-Q Plot: Tail Alignment
0.0050
0.0025
0.0000
−0.0025
−0.0050
−0.0075
−0.0100
−0.0125
−0.0125
−0.0100
−0.0075
−0.0050
−0.0025
0.0000
0.0025
0.0050