

Discussion of presentations on insurance and financial risk

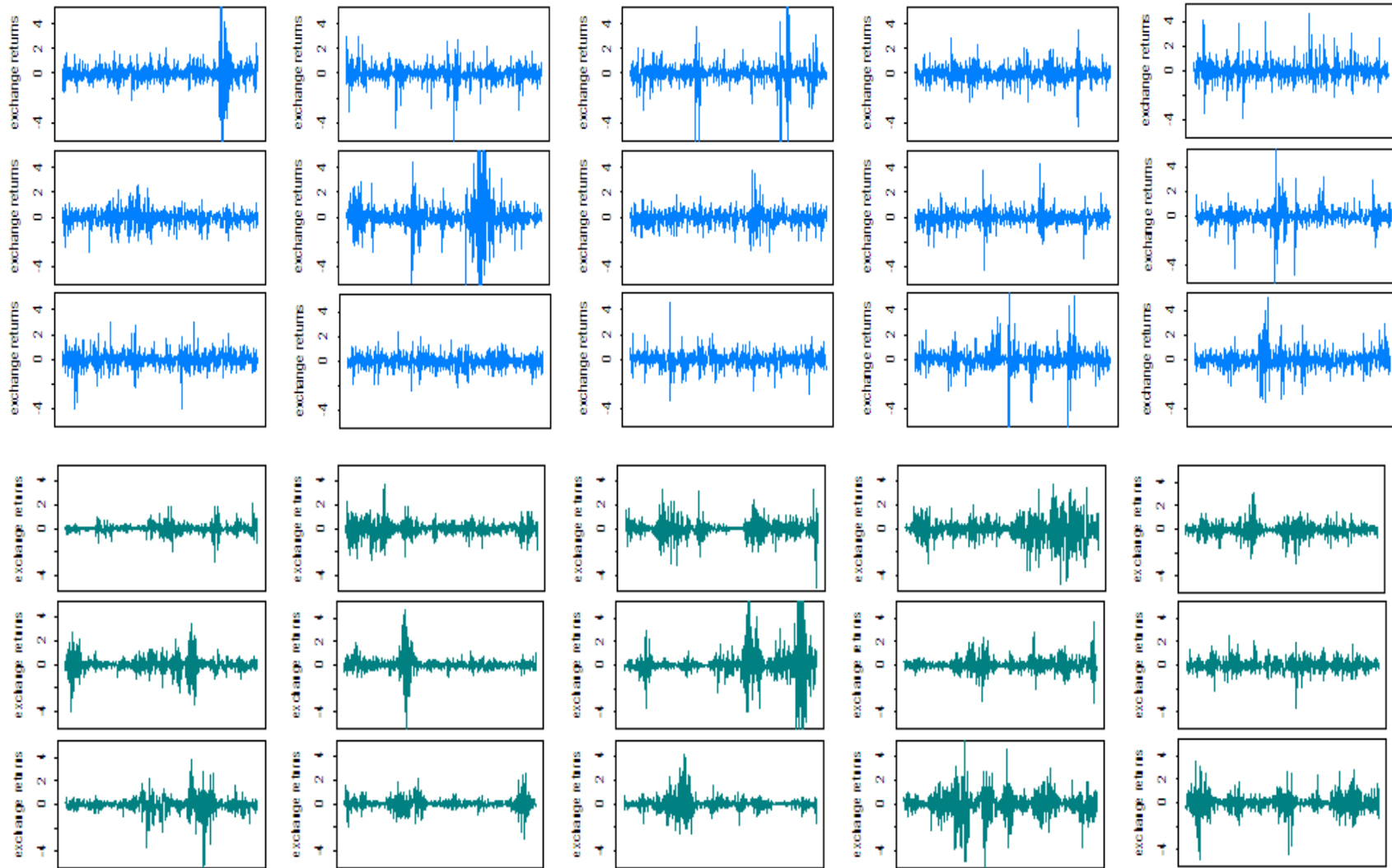
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Extremal index $\gamma < 1$ for GARCH and $\gamma = 1$ for SV

15 realizations of GARCH and SV models fitted to GBP-USD exchange rates.
Which realizations have clustered exceedances?

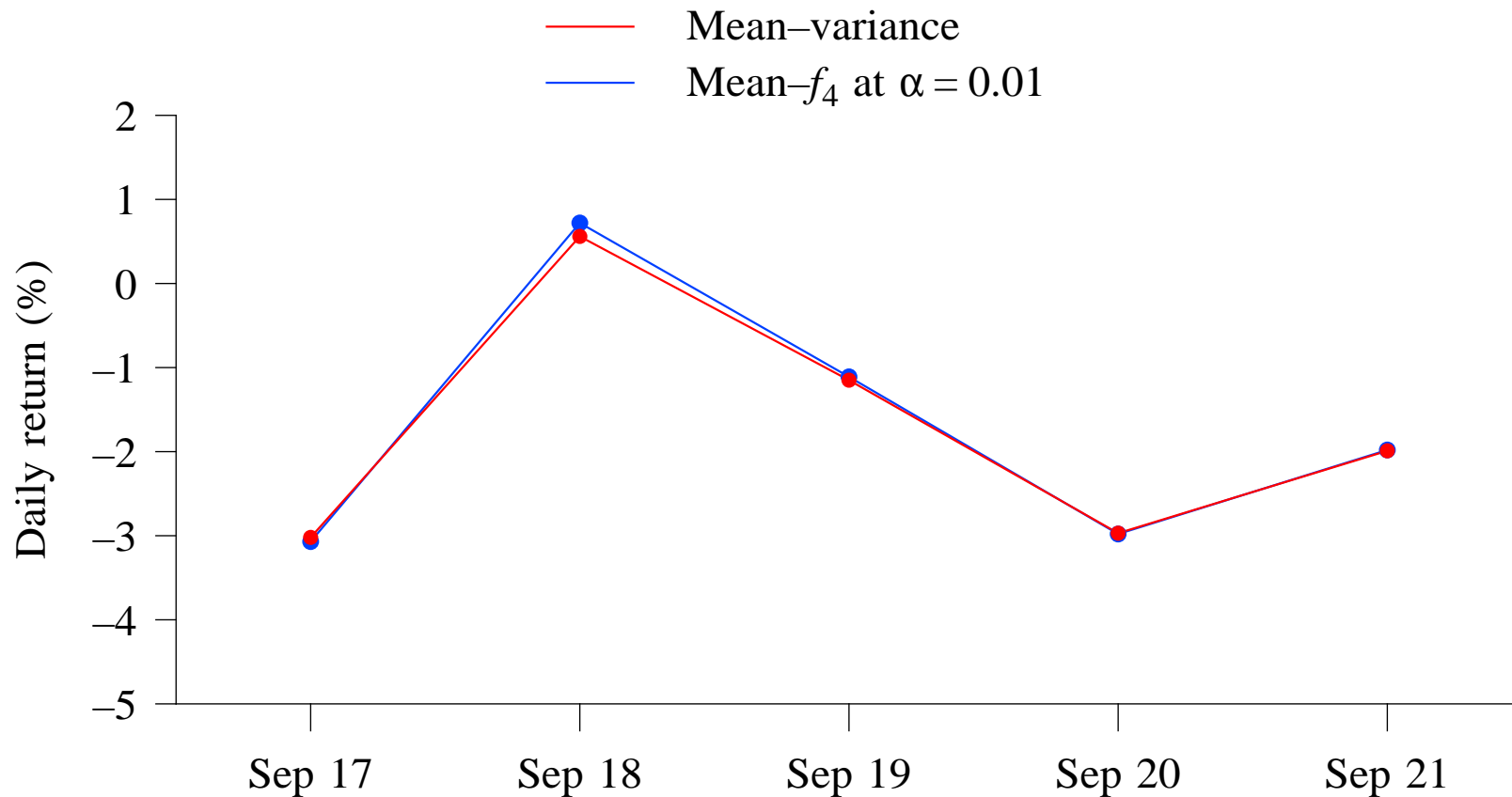


Adapted from R. Davis's SAMSI presentation, pages 10 & 12

Variance or f_4 (conditional mean exceedance)?

f_4 has better theoretical properties than the variance, but how much difference does it make in practice?

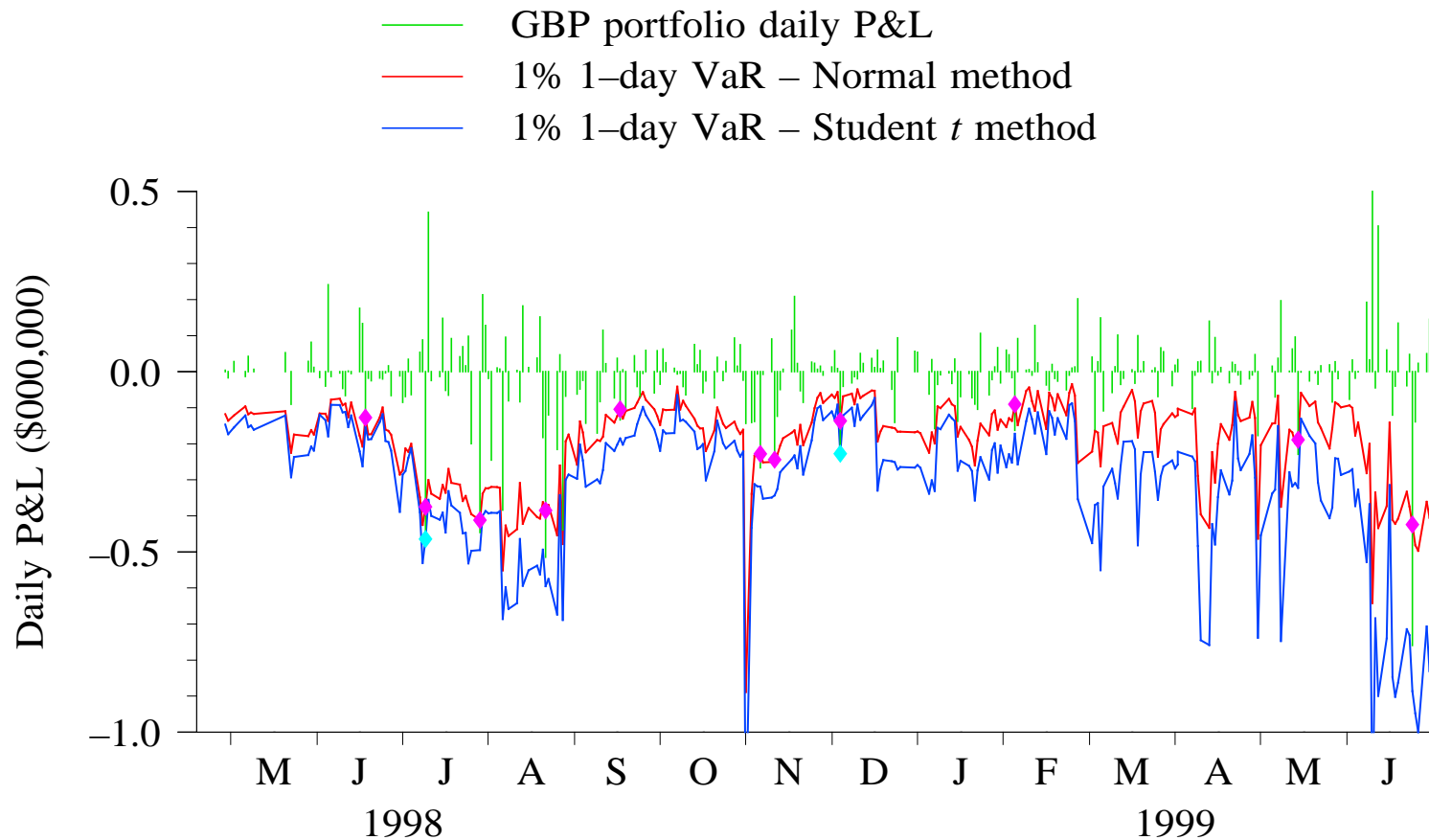
Post Sep. 11, 2001, portfolio returns for expected return 0.20



Data from Santos and Haimes, 2002, Table XI.

Importance of getting tail weight right

Value at Risk for a portfolio of GBP-denominated bonds, computed assuming distribution of daily log-returns Normal or Student t .



- ◆ Actual loss exceeds Normal VaR: 11 times in 263 days
- ◆ Actual loss exceeds Student t VaR: 2 times in 263 days

Methods described in Hosking, Bonti, and Siegel, *Risk*, May 2000.

The gulf

“there is often a gulf between the policy maker and the analyst in communicating what a model can and cannot do” – D. Goodman

Theory ————— Practice

Risk and extreme risk

How extreme are the risks that most need to be considered?

	Severe risk	Extreme risk
Data issues	Requires, at most, mild extrapolation from historical data	Far beyond the range of historical data
Accuracy of risk estimates	Risk estimates uncertain, but uncertainty can be estimated	Little idea how uncertain our best estimates are
Examples	Hurricane Oil price jump	Terrorist attack Pandemic
Current approaches	Value at Risk Hill plot	Stress testing Expert judgement

Bridging the gulf

- What are the overarching issues in risk analysis?
- Where are the similarities between different industries or areas of application?
- Be aware of evolving and emerging areas. Examples: services industry, IT systems.