

UIC, Finance, and R

Dale W.R. Rosenthal¹

UIC Finance, International Center for Futures and Derivatives

10 October 2008

¹daler@uic.edu; tigger.uic.edu/~daler

R-powered Research from UIC Finance

- Consulting for CBOE on market surveillance.
- Trade signing (for fitting impact models).
 - Fit GNLMM with 2.2MM trades across 2,836 stocks.
 - Backtested with 16.5MM trades across same universe.
 - Compiled *R* with 64-bit libraries to break 2GB barrier.
 - Linked in GotoBLAS: threaded linear algebra, twice as fast.
- Modeling correlated defaults in CDO tranches.
- Modeling delay between trade print and quote timestamps.
- Ultra-high-frequency covariance estimation and forecasting.

R-powered Learning from UIC Finance

- Opening courses up to quantitative professionals:
 - Fixed Income and Derivatives;
 - Futures and Options;
 - Commodity and Related Markets;
 - Market Microstructure and Electronic Trading;
 - Statistics for Financial Markets;
 - Methods for Empirical Finance.
- These courses are moving or have moved to use *R*.
- Quantitative nature of finance requires proper tools.
 - Sometimes, we need to get “under the hood.” (free speech)
 - Don’t want to bankrupt ourselves/our students. (free beer)
- *R* allows us to boldly go where no classes have gone before.

Why the ICFD Is Sponsoring Tonight

- Why are no finance researchers taking up the *R* banner?
 - Outdated view that the details don't matter?
 - Lack of statistical training?
 - Use of legacy tools? (e.g. economists and Stata.)
- *R* is making our research and teaching better.
- Part of ICFD's mission: Dialogue with trading community.
- What does this mean for *R*?
 - Evangelists for *R* in academic finance? Definitely.
 - *R* packages based on our research? Yes.
 - More? Open to suggestions. (daler@uic.edu)
- ICFD is involved because we believe in *R* and the community.

Boldly Going: The Glosten and Milgrom (1985) Model

- Model for bid-ask when market maker faces adverse selection.
- Some traders know true value of a security.
- Prices converge to true value; trades have price impact.
- *What does it look like?* No texts show you; easy with R .

Boldly Going: The Glosten and Milgrom (1985) Model

- Model for bid-ask when market maker faces adverse selection.
- Some traders know true value of a security.
- Prices converge to true value; trades have price impact.
- *What does it look like?* No texts show you; easy with R .

