

DEPARTMENT OF STATISTICS SEMINAR SERIES

SIDNEY SMITH HALL, ROOM SS1083

THURSDAY, 11 OCTOBER 2012 AT 3:00PM

Dynamic Latent Threshold Modelling

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Our recently introduced concept of *dynamic latent thresholding* has been demonstrably valuable in a range of studies in multivariate time series analysis and forecasting. Several recent applications include studies in finance and econometrics where the new modelling approach induces improved forecasts, resulting decisions and model interpretations, while the ideas are relevant in many other areas. I will describe the general idea of latent thresholding as an approach to *dynamic sparsity* modelling, and adaptive, time-varying variable inclusion/selection in time series. This will cover estimation and prediction in several model contexts: dynamic regressions, time-varying vector autoregressions, dynamic latent factor models, and multivariate volatility models. Substantive examples in macroeconomic and financial time series studies will highlight some of the practical interest in the approach: dynamic latent thresholding can: induce interpretable, data-driven dynamic sparsity of multivariate models, reduce estimation and

prediction uncertainties, improve predictive model fit and out-of-sample predictions, and improve decision outcomes when decisions are informed by dynamic models combined with Bayesian decision theory. Time permitting, I will also touch on the use of latent thresholding ideas in studies of *dynamic networks*, where the approach can naturally model time-variation in the structural nature of feed-forward/back interconnections between network nodes, with some current evaluation in studies in biomedical applications.

This is joint work with **Jouchi Nakajima**, Department of Statistical Science, Duke University.

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