

COLLOQUIUM

Impulse Response Inference for Matrix Time Series

Colloquium Speaker: Ivan Ricardo
visiting scholar

10-15-26

SIUC Neckers 156 - Time: 3:30-4:30pm

Reception immediately following in the math library.

Title: Impulse Response Inference for Matrix Time Series

Abstract: Matrix autoregressive (MAR) models offer a parsimonious framework for modeling matrix-valued time series, yet tools for estimation and inference for their impulse response functions are lacking.

We develop asymptotic and bootstrap-based inference for impulse responses of stable $MAR(p)$ models.

We derive the joint asymptotic distribution of the coefficient and covariance estimators, which permit closed-form delta-method standard errors.

To address finite-sample bias, we propose ProBAB-MAR, a bias-corrected bootstrap that projects the corrected coefficients back onto the Kronecker parameter space, and prove that it attains asymptotically correct coverage.

Monte Carlo simulations show that delta-method intervals undercover in small samples, while ProBAB-MAR achieves near-nominal coverage with intervals considerably narrower than those from an unrestricted VAR.

An application to Euro-area inflation illustrates how shocks transmit across countries and inflation categories.