

**MICHIGAN STATE UNIVERSITY**  
Department of Statistics and Probability

## COLLOQUIUM

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### **Interval Estimation for Random Coefficient AR Model and Predictive Regressions**

Tuesday, October 15, 2013  
10:20 a.m. - 11:10 am  
Refreshments 10:00 am  
C405 Wells Hall

**Abstract:**

The quasi maximum likelihood estimation of random coefficient autoregressive models requires coefficient randomness if non-stationary cases are allowed. In the first half of the talk, we propose empirical likelihood methods based on a weighted score equation to construct a confidence interval for the coefficient. We do not need to distinguish whether the coefficient is random or deterministic and whether the process is stationary or non-stationary. A simulation study confirms the good finite sample behavior of the proposed methods, and we apply our methods to study U.S. macroeconomic data.

In the second half of the talk, we study the predictive regression models in financial econometrics. For testing the predictability, procedures based on the least squares estimator and other bias-corrected estimators proposed in the literature suffer from a complicated asymptotic limit, which depends on whether the predicting variable is stationary or non-stationary or has an infinity variance. In this paper, we propose a novel weighted estimation approach to estimate the coefficient, which always has a normal limit regardless of predicting variable being stationary or non-stationary or having an infinite variance. However, the asymptotic variance still depends on the case of stationary or non-stationary. To overcome this difficulty, we propose a unified (empirical likelihood) method to test the predictability without estimating the asymptotic variance. A Monte Carlo experiment is then conducted to illustrate the finite sample performance. Finally, an empirical example is examined to demonstrate the proposed estimation and testing methods.

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