



THE UNIVERSITY OF
CHICAGO

Department of Statistics

MASTER'S THESIS PRESENTATION

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Bayesian Factor Model Shrinkage for Linear IV Regression with
Many Instruments

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Eckhart 110, 5734 S. University Avenue

ABSTRACT

This talk approaches the weak instruments problem in linear instrumental variable models from a Bayesian perspective. First, a slice sampler is developed, which leverages a decomposition of the likelihood function that is a Bayesian analogue to two-stage least squares. The new sampler permits non-conjugate shrinkage priors to be implemented easily and efficiently. The new computational approach permits a Bayesian analysis of problems that were previously infeasible due to computational demands that scaled poorly in the number of regressors. Second, a new predictor-dependent shrinkage prior is developed specifically for the many instruments setting. The prior is constructed based on a factor model decomposition of the matrix of observed instruments, allowing many instruments to be incorporated into the analysis in a robust way. Simulation studies and three empirical analyses demonstrate the usefulness of the method.

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