

# Bayesian Inference of Financial Market Frictions: Time-Varying DSGE Estimation with Heterogeneous Shock Propagation

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## Abstract

We develop a time-varying parameter DSGE model that captures heterogeneous financial frictions using Bayesian methods. We advance the theoretical framework by introducing differentiated shock propagation mechanisms across market segments, implemented through an efficient MCMC algorithm in Julia with DynamicPPL. Our methodological innovation lies in combining robust convergence diagnostics with heterogeneous friction channels, allowing for more nuanced modeling of financial market dynamics. The computational framework leverages university cluster resources to handle the intensive estimation requirements, while ensuring reproducibility through automated testing protocols. We contribute to the literature by developing new approaches to parameter estimation in DSGE models while maintaining computational efficiency. This research provides a foundation for understanding how financial shocks propagate differently across market segments, with implications for monetary policy implementation.