

BAYESIAN ANALYSIS OF FACTOR MODEL FOR MEASURING BUSINESS CYCLE IN JAPAN

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Abstract

This study estimates business cycles, turning points and shocks using macro economic variables in Japan with Markov switching (MS) factor model. Shocks of the financial crisis in 2008 and the Great East Japan Earthquake in 2011 on Japanese economy were so large. Owing to these crisis, the conventional MS factor model cannot estimate turning points, properly. Considering large shocks, both the common factor common factor and idiosyncratic noises are extended by employing the fat-tale error or stochastic volatility (SV). This study estimates the extended model using macro data during the period of 1985/1-2016/6 via Markov chain Monte Carlo method. Empirical result shows that both common factor and idiosyncratic noises have symmetric fat-tail error. It is also shown that estimates of business cycles and turning points are close to those published by Economic and Social Research Institute once fat-tale error and SV introduced.

Key Words: Business cycle inference; Generalized hyperbolic skew Student's t -distribution; Markov chain Monte Carlo (MCMC); Markov switching factor model; Stochastic volatility.

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