Zero interest rate policy and asymmetric price adjustment in Japan: an empirical analysis of a nonlinear DSGE model[*]

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Abstract

We incorporate zero lower bound (ZLB) in monetary policy rule and asymmetric adjustment costs (AAC) in Rotemberg price setting mechanism and solve nonlinear New Keynesian DSGE models using projection method. And we estimate the latest Japanese economy between 1981:Q3 and 2015:Q1 from the viewpoint of Bayesian approach with particle filter. Marginal likelihood shows that both ZLB and AAC overwhelmingly contribute to explain fluctuations of his output growth, inflation and nominal interest rate. This result indicates that the adjustment costs in deflation are about 24-32% higher than those in inflation. The wide curved policy functions make the effects of monetary policy shock much more uncertain expressing as spread credible bands of the impulse responses. We also report models with only the ZLB constraint might mislead the effect of monetary policy to output and inflation over-estimated in the case of Japan.

Keywords, New Keynesian model, zero lower bound, Rotemberg price setting, policy function iterations, projection method, particle filter Metropolis-Hastings algorithm

JEL Classifications, C11, E32, E52

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