

# Estimating a Nonlinear New Keynesian Model with the Zero Lower Bound for Japan

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## Abstract

We estimate a small-scale nonlinear DSGE model with the zero lower bound (ZLB) of the nominal interest rate for Japan, where the ZLB has constrained the country's monetary policy for a considerably long period. We employ the time iteration with linear interpolation method to solve equilibrium and then estimate the model by using the Sequential Monte Carlo Squared method. Results of estimation suggest that (1) the Bank of Japan has been conducting monetary policy that depends on the lagged notional interest rate rather than the lagged actual interest rate and that (2) the estimated series of the natural rate of interest moves very closely to those based on the model without the ZLB.

Keywords: Bayesian inference; DSGE model; Particle filter; SMC

JEL classification: C11, C13, C61, C63, E31, E43, E52

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