

# Monetary Policy Regime Shifts under the Zero Lower Bound: An Application of a Stochastic Rational Expectations Equilibrium to a Markov Switching DSGE Model

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## **Abstract**

Using the concept and the algorithm of a *stochastic rational expectations equilibrium* (SREE) proposed by Billi (2013), I extend a simple new Keynesian model with Markov switching (MS) type Taylor rule introduced by Davig and Leeper (2007, AER) by incorporating constrain of the zero lower bound (ZLB). I calibrate and evaluate the effects of monetary policy regime shifts under the ZLB. When an economy does not face the ZLB constraint, there is no gap of fluctuations of output and inflation between stochastic expectations and perfect foresight because of linear policy functions. In contrast, this calibration shows that once negative aggregate demand shocks make nominal interest rate hit to the ZLB under stochastic expectations unlike perfect foresight, intensifying uncertainty measured by the volatilities of shocks would deepen further declines of endogenous variables even against the same shock, regardless of monetary policy regimes. These results suggest that perfect foresight is biased upward and that if an economy encounters a deep recession constrained by the ZLB, a policy guidance to form expectations would play an important role of recovering an economy by contributing to mitigating uncertainty of aggregate demand shock, rather than monetary policy regime should retain aggressively. And they also indicate a possibility that steady states of a model in the absence of the ZLB are underestimated in the period of deflation, since the means often used as estimates of the steady states are biased downward from those.