

# Measuring the effect of quantitative easing on lower bound of interest rate and economic activity <sup>☆</sup>

Hokuto Ishii<sup>a</sup>, Katsutoshi Shimizu<sup>b,\*</sup>

<sup>a</sup>*Graduate School of Economics, Nagoya University*

<sup>b</sup>*Department of Economics, Nagoya University*

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## Abstract

Using the shadow rate affine arbitrage-free Nelson-Siegel models and the shadow rates implied by consumption-Euler equation, we examine the effect of quantitative easing policy on the economy in a model with time-varying lower bounds of interest rates. We find evidence that (i) commitment policy in the midst of 2000s and large-scale asset purchasing after the Global Financial Crisis (GFC) caused the lowering of the lower bounds, (ii) expanding monetary base is more influential to the economy than expanding central bank reserves, and (iii) neither of these simple instruments are effective in lowering the lower bounds of interest rates. We argue that a central bank is able to lower the lower bounds, but its effect on the economy is too small.

*Keywords:* monetary policy, shadow rate, quantitative easing monetary policy, zero interest rate, term structure

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\*Corresponding author: Katsutoshi Shimizu, Department of Economics, Nagoya University.

Address: Furo-cho, Chikusa-ku, Nagoya, Aichi, 464-8601, Japan. Tel.: +81-52-789-2378, Fax: +81-52-789-2378

*Email addresses:* [ishii.hokuto@h.mbox.nagoya-u.ac.jp](mailto:ishii.hokuto@h.mbox.nagoya-u.ac.jp) (Hokuto Ishii), [shimizu@soec.nagoya-u.ac.jp](mailto:shimizu@soec.nagoya-u.ac.jp) (Katsutoshi Shimizu)