



Evaluating monetary policy when nominal interest rates are almost zero[☆]

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The non-negativity constraint on nominal interest rates may have been a major factor behind a putative structural break in the effectiveness of monetary policy. To check for the existence of such a break without making prior assumptions about timing, and to enable comparison between pre- and post-break monetary policy, we employ an identified Markov switching VAR framework. Estimation results support the existence of a structural break around the time when the de facto zero nominal interest rate policy was resumed and the effectiveness of monetary policy is seen to weaken since then although slightly positive effects from monetary easing still exist. *J. Japanese Int. Economies* **20** (3) (2006) 434–453. Research and Statistics Department, Bank of Japan.

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1. Introduction

It is often argued that the effectiveness of monetary policy has significantly weakened during the 1990s. When we look closely at the Japanese macroeconomy during the “lost decade” since 1990,¹ monetary policy does not indeed seem to have had any obviously stimulatory effects on

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¹ Hayashi and Prescott (2002) name the 1990s in Japan the “lost decade,” and search for the causes of the economic stagnation that characterizes the period.

the economy. Miyao (2000) points out three reasons for this: “(i) the yen’s appreciation to just over 80 yen per dollar, (ii) the Bank of Japan’s actions to lower the official discount rate or the call rate to a record low below 1%, and (iii) the series of bank failures that disclosed the serious bad loan problem in Japan’s financial sector.” Moreover, as concluded in Kimura et al. (2002), the introduction of the zero nominal interest rate may be expected to have lessened the effectiveness of monetary policy still further, by reducing the scope for easing interest rates or, to put it another way, by denying the economy the traditional interest rate channel for monetary policy transmission.

The principal aim of this paper is to check whether, due to the introduction of the zero nominal interest rate, the effects of monetary policy on the real economy are characterized by a structural break. Given such a break, the further aim is then to improve our understanding of the currently prevailing relationship between monetary instruments and other economic variables, especially when nominal interest rates are almost zero.

In order to check for the existence of such a break without making prior assumptions about timing, and to enable comparison between pre- and post-break monetary policy, a recently pioneered econometric technique known as identified Markov Switching Vector Autoregression (MSVAR) is employed in this paper. With this method, structural breaks are expressed in terms of Markovian regime shifts, where the latter are themselves one of the outputs of the estimation process. As long as the regimes identified by the Markov switching estimation are long-lived and distinct, it is appropriate to analyze the characteristics of a putative structural break by comparing the impulse responses of different regimes. This paper is the first attempt to employ the MSVAR for the analysis on the effectiveness of monetary policy in Japan.²

The paper is laid out as follows. Section 2 reviews the related literature: looking first at recent work on Markov switching regressions, and then turning to previous research that makes use of VARs to investigate monetary policy transmission mechanism. Section 3 provides the framework for analyses in this paper. The estimation process for the Markov switching model, the derivation of the impulse responses, and the use of bootstrapping to establish confidence intervals are explained. In Section 4, results from an MSVAR model with an explicit interest rate channel are demonstrated. Section 5 further constructs two MSVAR models with an implicit interest rate channel, which suit the current monetary policy scheme employed by the Bank of Japan, and results from these models are also summarized. The aim here is to enable us to attain insight into the effectiveness of the Bank of Japan’s current “quantitative easing” policy. Section 6 concludes the paper.

2. Previous research

This section reviews previous research, first of all on Markov switching models, and then on VAR models of the monetary policy transmission mechanism.

Researchers have recently begun to pay more attention to Japan’s unusual experiences since the collapse of the bubble economy: cf. Bayoumi and Collins (1990) and Ramaswamy and Rendu (2000).

² Markov switching model has been widely used for dating the business cycles since its introduction by Hamilton (1989). For example, Watanabe (2003) measures business cycle turning points in Japan with a dynamic Markov switching factor model.

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