The Bank of Japan's operating procedures and the identification of monetary policy shocks: A reexamination using the Bernanke–Mihov approach

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Nakashima, Kiyotaka—The Bank of Japan's operating procedures and the identification of monetary policy shocks: A reexamination using the Bernanke–Mihov approach

This paper reexamines the operating procedures of the Bank of Japan (BOJ) using the structural VAR approach of Bernanke and Mihov [Measuring Monetary Policy, Quart. J. Econ. 113 (1998) 869–902]. This approach identifies the exogenous components of monetary policy by establishing equilibrium models of the reserve market. In this paper, two equilibrium models are presented: the Implicit Cost (IC) model and the Credit Rationing (CR) model. These particular models are distinguished by opposing views about the BOJ's discount-window borrowing policy. The IC model is characterized by the assumption that the BOJ endogenously accommodates the demand for discount-window borrowing by private banks, whereas the CR model assumes that the BOJ exogenously controls the level of discount-window lending. The results indicate that the CR model is superior to the IC model in describing the operating procedures used by the BOJ up to June 1995. *J. Japanese Int. Economies* **20** (3) (2006) 406–433.
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1. Introduction

The analysis of monetary policy indicators that are controlled by central banks, and assumed to be closely related to the real economy, is one of the most important issues in macroeconomics. Some economists have examined short-term interest rates in this regard, including the call rate and the federal funds rate, while others have considered money supply variables such as M2 + CD and high-powered money. However, before the analysis of any particular monetary variable as a prospective policy indicator can be undertaken, a number of questions arise. How can policy indicators be specified which precisely reflect the central banks' past policy decisions? Can policy indicators be specified using single monetary variables? If not, how should they be specified? The current paper is motivated by these empirical questions. In particular, the paper explores the best policy indicator of the Bank of Japan (BOJ) and identifies policy shocks by employing the structural VAR approach of Bernanke and Mihov (1998). This approach allows the specification of central bank policy indicators and the clarification of operating procedures by formulating equilibrium econometric models of the reserve market. In general, central banks aim to stabilize the macroeconomy by intervening in the reserve market and setting short-term interest rates or reserves within a target range. The approach selected is convincing because it assumes that monetary variables that are affected by the operating procedures of central banks in the reserve market embody the decisions of central banks.

In a traditional structural VAR framework, the most convenient identification scheme for the exogenous components of monetary policy since Sims (1980) is based on Cholesky decompositions. If this identification scheme is employed, we must select a priori a single measure of monetary policy and also specify a recursive structure for the macroeconomy. In the VAR literature concerning Japanese monetary policy, Miyao (2002, 2000), Ogawa (1999), and Hatakeda (1997) assume that the BOJ's policy stance can be measured by the call rate. They then examine business fluctuations and the role of monetary policy in Japan.[1]

In more recent work, Sims and Zha (1998) suggest an identifying methodology that does not depend on the recursive assumption, and which imposes a contemporaneous restriction on all economic variables in a VAR system. As an alternative, Sims (1986), Gordon and Leeper (1994), and Leeper et al. (1996) impose a contemporaneous restriction on all economic variables in a VAR system, assuming that at least a subset of goods market variables are predetermined. In this paper, an identification scheme that imposes a contemporaneous restriction on all economic variables in a VAR system is titled the "Sims scheme." By way of contrast, Bernanke and Mihov (1998) suggest an identifying methodology that divides the macroeconomy into a policy sector and a non-policy sector, and after assuming a block recursive structure between the two sectors, imposes a contemporaneous restriction on monetary variables in the policy sector. In this paper, such identification is called the "Bernanke–Mihov scheme."

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[1] In the VAR literature on US monetary policy, Christiano et al. (1996), Christiano and Eichenbaum (1992, 1995), Bernanke and Blinder (1992), and Sims (1992) use the federal funds rate or non-borrowed reserves as policy indicators of the Federal Reserve in order to investigate the effects of monetary policy on the US economy.