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Were there structural breaks in the effects of Japanese monetary policy? Re-evaluating policy effects of the lost decade

Tomoo Inoue^a, Tatsuyoshi Okimoto^{b,*}

^a Faculty of Economics, Seikei University, 3-3-1 Kichijoji Kitamachi, Musashino, Tokyo, Japan

^b Faculty of Economics and IGSSS, Yokohama National University, Japan

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This paper employs block recursive structural VAR models with Markov switching for modeling monetary policy and private sector behavior of the Japanese economy. By estimating the endogenous structural breaks, we investigate the existence, number, and nature of breaks possibly implied by the monetary policy adopted between 1975 and 2002. Results indicate that the Japanese economic system is best described by a non-absorbing two-state model, with major break happened around 1996. We also confirm that the interest rate monetary policy was effective before 1996, while monetary base shocks are identified as monetary policy shocks only after 1996. *J. Japanese Int. Economies* **22** (3) (2008) 320–342. Faculty of Economics, Seikei University, 3-3-1 Kichijoji Kitamachi, Musashino, Tokyo, Japan; Faculty of Economics and IGSSS, Yokohama National University, Japan.

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* Corresponding author at: International Graduate School of Social Sciences, Yokohama National University, 79-4 Tokiwadai, Hodogaya-ku, Yokohama, Kanagawa, Japan.

E-mail addresses: inoue@econ.seikei.ac.jp (T. Inoue), okimoto@ynu.ac.jp (T. Okimoto).

1. Introduction

After the bursting of the asset price bubble in the early 1990s, the Japanese economy experienced a long-lasting economic stagnation. The industrial production index once reached a high of 101.04 in May 1991, and sixty-eight months were needed to break this high in January 1997.¹ The growth rate of real GDP from the first quarter of 1991 to the first quarter of 2002 was only 0.92% per annum, which is also very low.² Lack of aggregate demand necessarily reduced job opportunities. As a result, the unemployment rate rose from 2.2 percent (February 1991) to 5.4 percent (February 2002).³ For these reasons, this period of turmoil is referred as the *lost decade* (Hayashi and Prescott, 2002) or the *great recession* (Kuttner and Posen, 2001).

In order to explain this economic stagnation, a number of competing hypotheses emerged from differing points of view, and have been tested empirically. These views are roughly classified into either supply-shortage hypotheses or demand-shortage hypotheses.⁴

As proponents of the supply-shortage hypothesis, Hayashi and Prescott (2002) emphasize the importance of the decline in the growth rate of total factor productivity (TFP). They argue that by treating TFP as an exogenous factor, the neoclassical growth model accounts well for the Japanese lost decade of growth. Concerning the effect of low TFP growth on demand-shortage, Miyao (2006) confirms the positive and persistent relationship between them by estimating a four-variable VAR model with stock prices, call rates (interbank rates), TFP, and GDP gaps. By applying historical decomposition, Miyao also finds that GDP gaps in the post-1993 period were associated with a series of negative productivity shocks. Regarding one source of low TFP growth, Caballero et al. (2006) point to the misallocation of credit by banks to unprofitable borrowers, appropriately referred to as *zombie* firms. In order to prevent their own bankruptcy, banks hesitated to stop extending loans to zombies. Caballero et al. argue that this reduced the potential profits from new and more productive entrants.

On the other hand, the hypotheses of demand-shortage proponents consist of three views. The first view is called a credit crunch hypothesis. This hypothesis, unlike Caballero et al. (2006), interprets a decline of the banking sector's financial intermediary function as a cause of demand-shortage. The banks could not supply the necessary amount of funds to companies when needed for business investment since banks were suffering from non-performing loan problems. The second view emphasizes the misconduct of fiscal policies. Kuttner and Posen (2001, 2002), for example, estimate the effects of fiscal spending and tax cuts with a structural VAR, and find that a tax cut was an effective measure for stimulating the economy in the 1990s. However, the tax burden increase in 1997 was more than any of the fiscal stimulus packages that were implemented in the 1990s (Kuttner and Posen, 2001, p. 128). Therefore, they conclude that an inadequate choice of fiscal policy aggravated stagnation in the lost decade. The third view focuses on change in the effectiveness of monetary policy, a hypothesis that we investigate in this paper. Particularly in the late 1990s, when the nominal interest rate approached the zero boundary,

¹ After breaking the high recorded in May 1991, the index reached a new high of 102.76 in May 1997. Immediately after this, the index dropped again due to economic stagnation. Thereafter, it required ninety-two months to revise the high again at 103.41 in January 2005.

² The average annual growth rate is calculated from the seasonally adjusted quarterly figures of gross domestic expenditures at constant prices (fixed, base year 1995). Data are downloaded from <http://www.esri.cao.go.jp/en/sna/qc052-2/gdemenuabr.html>.

³ Japanese government, Statistics Bureau web page: <http://www.stat.go.jp/data/roudou/longtime/03roudou.htm>.

⁴ As a direct comparison of competing hypotheses, see Bayoumi (2001). By estimating a VAR that includes variables from each hypothesis, Bayoumi investigates their relative importance between different hypotheses.

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