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A New Keynesian model for analysing monetary policy in Mainland China[☆]

Li-gang Liu [1], Wenlang Zhang [*]

Research Department, Hong Kong Monetary Authority, 55th Floor, II International Finance Centre, 8 Finance Street, Central, Hong Kong

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ABSTRACT

This paper adopts a four-equation New Keynesian model to evaluate the appropriateness of China's monetary policy framework. Our simulation results show that a hybrid rule that uses both interest rate and quantity of money as instruments outperforms the rules using one instrument alone at the current stage of economic and financial market development. Our analysis also shows that a sharp appreciation of the renminbi exchange rate, though effective in containing inflation pressures, would be quite disruptive to growth.

1. Introduction

The Law of the People's Bank of China (PBoC) states that the objective of Mainland China's (henceforth China) monetary policy is to maintain price stability so as to promote economic growth. The policy instruments at the PBoC's disposal to achieve this objective include reserve requirement ratio, benchmark interest rates, re-discounting, open market operations, and other administrative policy instruments (including window guidance) specified by the State Council. The mandates of the PBoC are similar to those of central banks in industrial economies, although the PBoC is less independent than its counterparts in major economies. In reality, however, China's monetary policy appears to have more goals than mandated by the Law. According to Governor Zhou Xiaochuan (a speech note in Caijing Magazine, 25 December 2006), the PBoC aims not only at price stability and economic growth but also at full employment and external balance. Furthermore, it has the responsibility of promoting financial liberalisation and financial sector reforms. To achieve these objectives, the PBoC utilises instruments of both quantity and price in nature, largely reflecting severe structural impediments of a transitional economy and the underdevelopment of financial markets.

This paper is meant to answer the following questions: How can one evaluate the effectiveness of the current monetary policy framework in China? Is the policy framework employing both quantity and price instruments more effective than one that uses a single instrument? We will use a small New Keynesian model with four behaviour equations to shed some light

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* Corresponding author. Tel.: +852 2878 1830; fax: +852 2878 1897.
E-mail addresses: ligang.liu@anz.com (L.-g. Liu), wzhang@hkma.gov.hk (W. Zhang).
1 Australia and New Zealand Banking Group Limited, Hong Kong.

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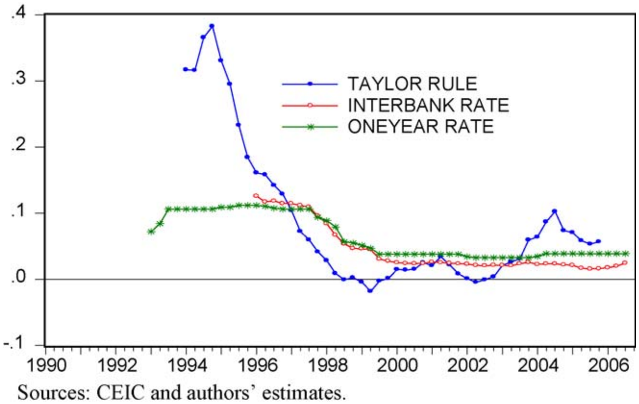

Fig. 1. A standard Taylor rule.Sources: CEIC and authors' estimates.

on these issues. These equations stem mainly from the first order conditions of open-economy dynamic stochastic general equilibrium (DSGE) models, and are modified somewhat here to capture the reality of the Mainland economy. Our simulation results show that a hybrid rule that relies on both interest rate and quantity of money in gearing monetary policy stance appears to outperform rules which use one instrument alone. Moreover, we find that a sharp appreciation of the renminbi exchange rate would notably hurt China's economic growth, although it can effectively manage inflationary pressures.

The rest of the paper proceeds as follows: Section 2 discusses the rationale behind the use of both price and quantity instruments in gearing monetary policy stance on the Mainland. Section 3 presents and parameterises the four-equation model. Section 4 conducts policy simulations to shed light on some topical issues on China's monetary policy. Section 5 concludes the paper.

2. The monetary policy framework in China

The process of monetary policy conduction in China can be described as follows: The PBoC first sets the money supply and credit growth as the intermediate targets at the beginning of each year (Peng, Chen, & Fan, 2006; Laurens & Maino, 2007), which are then monitored closely during the course of the year. Deviations from these targets are fine-tuned by a combination of policy instruments including reserve requirements, open market operations, benchmark lending and deposit interest rates, and moral suasion (or administrative and window guidance measures). Laurens and Maino (2007) argue that this approach, though second best, seems to be appropriate for China at the current stage of economic development. As shown in Figs. 1 and 2, neither a standard Taylor rule (Taylor, 1993) nor a quantity of money rule following McCallum (2003) tracks the PBoC's policy rate and $M2$ growth well.[2]

2.1. Why is the interest rate rule alone inadequate?

Structural impediments such as the underdeveloped banking system and market segmentations have made the interest rate rule alone inadequate. First, the credit channel of monetary policy transmission via China's banking system does not appear to be effective. Despite the increasing importance of direct financing, the structure of financing in China continues to be dominated by banks. The banking sector accounts for the largest share of China's financial assets and intermediates (about 75% of financial capital), suggesting that credit markets remain the key channel of monetary transmission (McKinsey Global Institute, 2006). While the efficacy of the credit channel of monetary policy transmission has improved in recent years, as indicated by a sharp drop in the non-performing loan ratio from about 40% to 50% in the late 1990s to less than 2% in late 2009,[3] operational reforms in commercial banks, especially those large state-owned commercial banks, have just begun and most banks are still insensitive to market risks. This suggests the role of interest rates in allocating capital remains inadequate despite years of financial reforms and the increased pace of interest rate liberalisation.[4]

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[2] The standard Taylor rule reads $R_t = r_t^* + \pi_t + 0.5(\pi_t - \pi_t^*) + 0.5\hat{Y}_t$, where r, π, and Y denote real interest rate, inflation rate, and real GDP, respectively. The mark of "*" indicates the equilibrium value of r or π and the symbol of "^" indicates the deviation from the potential output. Estimation of potential output will be introduced in later sections. The McCallum rule is $\Delta M_t = \Delta x_t^* - \Delta v_t + 0.5(\Delta x_t^* - \Delta x_{t-1})$, where ΔM denotes nominal money growth (measured as year-on-year growth in broad money, $M2$), Δx_t and Δx_t^* denote the actual and target GDP growth in nominal terms, and Δv_t is the growth in money velocity. The nominal target GDP growth is set at 11% (the inflation target of 3% plus annual real GDP growth target of 8%).

[3] See Matthews, Guo, and Zhang (2007) for the estimates of the 1990s and CEIC for the number of 2009. There are various estimates of China's non-performing loans in the literature.

[4] Interest rate has largely been liberalised after the removal of ceilings on lending rates and of a floor on deposits in October 2004. However, a floor is retained for lending rates and a ceiling for deposit rates, though differentiated by maturity and size of the deposits. Money market rates are mostly liberalised, but interest rate for bond issues is still regulated. Nevertheless, interest rate will have greater role in conducting monetary policy going forward.