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## What measures Chinese monetary policy? ☆



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### ABSTRACT

This paper models the PBC's operating procedures in a two-stage vector autoregression framework. We decompose changes in policy variables into exogenous and endogenous components in order to find a "clean" monetary policy indicator whose changes are mainly policy induced. Our main findings are twofold. First, the PBC's operating procedures have evolved over time; since about 2006, they have developed to a relatively stable regime. Second, its operating procedures are neither pure interest rate targeting nor pure reserves targeting, but a mixture. A set of indicators all contain information about the policy stance. Finally, we construct a new composite indicator of the overall policy stance.

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## 1. Introduction

The proper measurement of monetary policy is the premise of accurate estimates of policy impact. An indicator is optimal when it is not subject to influences of non-policy factors and changes in this indicator reflect shifts in the policy stance only. For decades, studies have been dedicated to a search for such a variable, and many focus on the case of the Federal Reserve (see, e.g., [Bernanke and Mihov, 1997, 1998](#); [Boschen and Mills, 1995](#); [Brunner and Meltzer, 1964](#); [Romer and Romer, 1989, 2004](#)). A consensus has emerged that the federal funds rate measures the Fed's monetary policy well under

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its operating procedures at normal times. Yet, this conclusion cannot be simply applied to the case of People's Bank of China (PBC) because measurement of monetary policy is regime dependent and, apparently, these two central banks follow different operating procedures. Hence, a search for the proper measurement of Chinese monetary policy requires an independent study with a careful examination of the PBC's operating procedures.

The main challenge in measuring the PBC's monetary policy stance arises from the fact that the PBC uses multiple policy instruments, none of which can be described as dominant. All these frequently used policy instruments contain information about the PBC's policy. Yet, it is not straightforward to summarise all policy information into a single indicator. Another challenge is that observed changes in policy instruments are not all policy induced. Under different operating target frameworks, either the quantity of money or the interest rate turns out endogenous. For example, the central bank accommodates rises in the demand for money to keep the short-run interest rate at its targeted level. In this case, the targeted interest rate remains unchanged and the policy stance is better described as no change. But focusing on money supply only, one might mistakenly interpret this accommodation exercise as a monetary easing.<sup>1</sup> It is thus essential to disentangle changes in policy instruments into three parts: systematic responses to the state of the economy, regime-dependent liquidity market operations and exogenous components, among which component 2 does not reflect shifts in the policy stance. Such disentangling requires careful modelling of central banks' response functions. In the case of China, the PBC has responsibility for various tasks using multiple instruments. Its response behaviour is thus better specified in several response functions, rather than a single one.

Several studies address the PBC's policy measurement problem,<sup>2</sup> focusing on the challenge that the PBC uses multiple instruments. These studies mainly follow two lines. The first line is the narrative approach, as in Sun (2013), Shu and Ng (2010) and Sun (2015). All of these studies use the PBC's documents to infer the information about policy-makers' intentions. Based on this information, the first paper identifies three exogenous contractionary monetary policy episodes<sup>3</sup> while the latter two build a time series to classify monetary policy conditions in China as tight, neutral or easy. The second line is to directly consider the PBC's instrument set, as in He and Pauwels (2008) and Xiong (2012). Both papers examine changes in the PBC's instruments over time and assign a value to each change. All these indices are then summarised into a single indicator (–1, 0, 1) to measure changes in monetary policy as an expansionary change, no change, and a contractionary change.

All of these studies contribute to a better understanding of the measurement problem of the PBC's monetary policy. However, a quick comparison of the policy indices obtained from these two approaches suggests that they do not always come to the same conclusion on the PBC's monetary policy stance: the correlation coefficient between the narrative index (Sun, 2015) and the instrument index (Xiong, 2012) is only 0.2 for the period of 2000–2010.<sup>4</sup> A consensus on how to measure the PBC's monetary policy stance is missing. An overall evaluation of these different indices requires one to look into how discrepancies arise. Possibly, these indices incorporate different components of changes in policy instruments. It may be insufficient to address the first challenge only. This paper aims to fill this gap. First, we model the PBC's operating procedures and thus decompose changes in policy variables. In so doing, we let the model identify a "clean" indicator, which is independent of other shocks to the reserves market such that its changes are policy induced. Second, with this model we build a new overall policy index (including both systematic responses and exogenous components) to compare and evaluate existing indices.

<sup>1</sup> Due to its endogeneity, money supply is no longer a good indicator of the stance of monetary policy in many advanced economies.

<sup>2</sup> Some studies overlook this measurement problem by gauging the PBC's monetary policy with either a short-term interest rate or some monetary aggregate. Yet, one needs to be cautious as a biased measure might result in misleading estimates.

<sup>3</sup> Those three episodes are defined as exogenous when the PBC opted for a contractionary shift to fight against higher inflation. The exogeneity comes from the fact that the current inflation is not directly correlated with the level of current and future output, which hence ensures an unbiased estimate of the policy effect on output even with a simple regression (see Sun, 2013).

<sup>4</sup> To make them comparable, we take the first difference of our narrative policy condition index and transfer it to the policy change index as well.

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