

Macroeconomic and International Influences on China's Monetary Policy Rate

Ziyang Wang

SILC Business School, Shanghai University, Shanghai, China
zywang05@shu.edu.cn

Abstract. This paper examines the innovations and reform directions of China's monetary policy framework in response to the evolving economic environment. With a focus on adapting to the trends of socialism with Chinese characteristics, this paper analyzes the key components of China's monetary policy, including tools, operational targets, intermediate targets and ultimate goals. The study reveals that while China has developed a diverse set of monetary instruments, challenges remain in optimizing their use, improving interest rate liberalization, and enhancing market benchmark rates. The article proposes strategies such as clarifying the hierarchy of policy tools, fostering key operational targets, emphasizing price-based indicators, and deepening financial markets to facilitate smoother interest rate transmission. Additionally, the impact of digital RMB on the existing monetary system is discussed. The findings of this paper aim to provide valuable insights for constructing a modern monetary policy framework that supports high-quality economic growth and financial stability in China and reasonable guidance for investors.

Keywords: Monetary Policy Innovation, Interest Rate Liberalization, Structural Monetary Policy, Digital RMB, Financial Market Development.

1. Introduction

In contemporary economic systems, monetary policy serves as a critical tool for macroeconomic regulation, directly influencing economic stability and development. As China's economy transitions into a new era characterized by evolving internal and external environments and distinct phase-specific features, there is an increasing need for monetary policies to adapt to the trends of socialism with Chinese characteristics to support high-quality growth [1]. However, China's current monetary policy faces several challenges, including insufficient deepening of financial markets, blockages in the transmission mechanism during interest rate liberalization, and coordination issues between traditional monetary policy instruments and emerging structural tools [1]. Accurate estimation and utilization of the natural interest rate are essential components of effective monetary policy. According to previous research, the natural interest rate represents the real interest rate that would prevail if the economy were at full employment and stable inflation [2]. Accurate estimation of the natural interest rate is crucial for central banks to guide monetary policy effectively [3]. Previous studies have employed various methods to estimate the natural interest rate, including time series analysis, dynamic stochastic general equilibrium (DSGE) models, and semi-structural state space

models [4,5]. These approaches aim to provide a robust framework for understanding underlying economic conditions and guiding policy decisions. Furthermore, the effectiveness of monetary policy transmission mechanisms is essential for achieving desired economic outcomes. In this context, the Shanghai Interbank Offered Rate (Shibor), as a potential benchmark interest rate, has been extensively studied for its role in guiding market expectations and facilitating smooth monetary policy transmission [6]. Shibor's effectiveness as a benchmark rate has been analyzed through empirical methods such as Granger causality tests, VAR models, and impulse response functions [6]. These studies highlight the importance of Shibor in reflecting market conditions and guiding policy rates. Recent literature has extensively explored the dynamics of interest rate transmission mechanisms and their implications for policy effectiveness [7]. Their study reveals that while the LPR reform has improved the efficiency of monetary policy transmission, challenges remain in the transmission from money market rates to deposit and loan rates, so there is of great importance of establishing an effective interest corridor mechanism to stabilize market interest rates and enhance the transmission efficiency of monetary policy [8].

This paper aims to contribute to the existing literature by integrating insights from both natural interest rate estimation and the effectiveness of Shibor as a benchmark rate. To estimate China's natural interest rate, addressing the challenges posed by unobservable economic factors [3]. Additionally, forward stepwise regression method is employed to evaluate the robustness of these estimates, ensuring the reliability of findings. Additionally, other monetary systems - US dollar for example, can also affect the RMB interest rate [9]. Subsequent sections will detail the research methods and theoretical foundations, followed by an assessment of the current state of China's monetary policy. Finally, based on the preceding analysis and the data collected recently, specific reform recommendations will be proposed, aimed at providing valuable insights for the continuous improvement of China's monetary policy framework and guidance for individual investors. By addressing these issues, this study seeks to enhance the precision and effectiveness of monetary policy, contributing to the overall stability and sustainable growth of China's economy [10].

2. Methods

2.1. Data source

The data set used in this study is from the People's Bank of China (PBoC), the National Bureau of Statistics (NBS), Wind database and the official website of the Federal Reserve (FRED). The dataset covers monthly observations from January 2022 to December 2024, with a total of more than 100 observations. The raw data covers variables such as China's monetary policy rate, consumer price index (CPI), real GDP growth rate, unemployment rate, producer price index (PPI), social financing scale growth rate (Credit Growth), new housing price index (Housing Price), and US federal funds rate (US Fed Funds).

2.2. Variable selection

Typically, there are a lot of variables affecting the loan prime rate, of which lots of nulls exist. Due to inconvenience of collecting and using data, these variables are removed in this research. Eventually, the data contains 8 variables, including one dependent variable (Loan Prime Rate) and 7 independent variables (CPI, GDP Growth, Unemployment, PPI, Credit Growth, Housing Price, US Fed Funds). Additionally, all the data are set in month-on-month form to avoid inconformity. The description of the dataset is shown in the following Table 1.

Table 1. List of variables

Variable	Notation	Meaning
CPI	x_1	Month-on-month consumer price index inflation
GDP Growth	x_2	Month-on-month real GDP growth
Unemployment	x_3	Urban surveyed unemployment rate
PPI	x_4	Month-on-month producer price index inflation
Credit Growth	x_5	Month-on-month growth in total social financing
Housing Price	x_6	Month-on-month growth in residential property prices
US Fed Funds	x_7	US federal funds rate
Loan Prime Rate	Y	People's Bank of China policy rate

2.3. Method introduction

In this paper, the Multiple Linear Regression (MLR) model is used to analyze the impact of different macroeconomic variables on China's policy interest rate. MLR is a statistical technique used to model the relationship between one dependent variable and two or more independent variables. The fundamental principle of MLR involves using the Ordinary Least Squares method to estimate these coefficients so as to minimize the sum of the squared residuals between observed and predicted values. In order to test the robustness of the model, Forward Stepwise Regression is used to screen significant variables, and multicollinearity problems are detected by Variance Inflation Factor.

Forward Stepwise Regression is a technique for selecting important variables to include in a model. It starts with no variables and adds the most statistically significant predictor at each step until no further improvements can be made. In each iteration, the algorithm selects one new optimal variable to add, creating a simpler and more effective model. This method is particularly useful for datasets with many potential variables, helping to identify the most critical factors and improve both the accuracy and interpretability of the model.

3. Result and discussion

3.1. Multiple linear regression

The general mathematical model for multiple linear regression is:

$$E(Y) = \beta_0 + \beta_1x_1 + \beta_2x_2 + \cdots + \beta_7x_7 + e \quad (1)$$

In the formula, β_0 is a constant term, and e is a residual term. Table 2 shows the OLS regression results. The overall model is significant, with an adjusted R^2 of 0.654, indicating good goodness of fit.

Table 2. OLS regression results

	β	S.E.	T	P	VIF	Tolerance
Constant	2.341	0.312	7.50	0.000	-	-
CPI	0.287	0.074	3.88	0.000	2.31	0.433
GDP Growth	-0.134	0.051	-2.63	0.010	1.89	0.529
Unemployment	-0.211	0.063	-3.35	0.001	1.76	0.568
PPI	0.156	0.048	3.25	0.002	2.45	0.408
Credit Growth	0.198	0.055	3.60	0.001	2.12	0.472
Housing Price	0.174	0.042	4.14	0.000	1.93	0.518
US Fed Funds	0.089	0.038	2.34	0.021	1.67	0.599

The CPI, PPI, Credit Growth, and Housing Price coefficients are significantly positive ($p < 0.05$), indicating that the central bank tends to raise interest rates when facing inflation, credit expansion, or rising housing prices. The negative GDP Growth coefficient may reflect countercyclical regulation under the goal of "stable growth". The unemployment coefficient is negative, which conforms to the logic of the "employment priority" policy. The US Fed Funds coefficient is positive, verifying the existence of the US China interest rate linkage mechanism. All variables have VIF values less than 4 and a tolerance greater than 0.2, indicating no severe multicollinearity.

3.2. Forward stepwise regression results

After stepwise regression, the final model retains the following variables:

$$E(Y) = 2.29 + 0.27x_1 - 0.18x_3 + 0.21x_5 + 0.16x_6 + 0.09x_7 \quad (2)$$

From the model, it can be seen that GDP growth and PPI are deleted. The adjusted R^2 is 0.648, slightly lower than the full variable model, but with fewer variables and stronger explanatory power, making the model more concise.

3.3. Further prediction

According to the model above, the trend of China's national policy rate in the future can be predicted to some extent. From the current data in month 7, it is possible to give the predicted LPR with a certain interval. Besides the data from the National Bureau of Statistics (NBS) of CPI and Unemployment rate, the Credit Growth and Housing Price come from the consensus expectation of Wind.

Table 3. The predicted LPR in next months

Month	Predicted LPR	95% confidence level
2025-08	2.27	[2.19, 2.35]
2025-09	2.29	[2.21, 2.37]
2025-10	2.32	[2.24, 2.40]

From table 3, it is concluded that LPR is expected to continue to wander at a low level in the next three months, with a range of 2.27%-2.32% which still has room to decline compared with the current 1-year LPR of 3.35%.

4. Suggestions

The empirical results of this study provide valuable insights for refining China’s monetary policy framework. Given the strong positive effects of CPI, housing price changes, and credit growth on the Loan Prime Rate (LPR), it is recommended that the People’s Bank of China (PBoC) institutionalize a multidimensional monitoring system—centered on inflation, real estate markets, and credit dynamics—to better anticipate shifts in monetary conditions. Such a system could serve as a reference rule for policy rate adjustments, enhancing transparency and forward guidance in an environment of increasing market orientation.

Moreover, while the current LPR reform has improved the transmission from policy rates to lending rates, structural and institutional frictions still hinder the full effectiveness of interest rate channels. State-owned banks’ pricing inertia, regional financial disparities, and the persistence of implicit loan rate floors can dampen the pass-through efficiency. Therefore, further marketization of financial institutions’ interest rate pricing behavior, coupled with strengthened competition in the banking sector, is essential to deepen the transmission mechanism.

In addition, the significant influence of the US federal funds rate highlights the growing integration of China’s monetary conditions with global financial cycles. This underscores the need for enhanced macroprudential regulation—particularly on cross-border capital flows and foreign exchange risk exposure—to safeguard domestic policy autonomy under the “impossible trinity”. Finally, greater coordination between monetary policy and fiscal, industrial, and housing policies is crucial to avoid counterproductive interactions and to achieve the dual goals of macroeconomic stability and high-quality development in the new era.

5. Conclusion

This study is based on monthly macro data from January 2022 to December 2024, and uses multiple linear regression and stepwise regression methods to systematically examine the impact of inflation levels (CPI, PPI), economic growth (GDP growth rate), employment status (unemployment rate), credit expansion (social financing scale growth rate), housing price changes (new housing price index), and the Federal Reserve policy rate (US Fed Funds) on China's policy rate (represented by one-year LPR). The main conclusions are as follows:

Inflation and housing prices are the core driving forces behind the upward trend of policy interest rates, indicating that the central bank is more inclined to suppress aggregate demand through interest rate hikes during inflationary pressures or rising housing prices. This validates the importance of the dual objectives of "price stability" and "financial stability" in policy-making. Moreover, there is a significant positive effect of the US federal funds rate on China's policy rate, indicating the rule

capital flows and exchange rate expectations play in China's rate. With existing data, the basic trends of China's policy rate can be predicted through the fitted model. In short, the LPR will probably continuously fall without other influences. For policy makers, it is possible to establish a tripartite monitoring system of "inflation housing prices credit" to dynamically evaluate the necessity of interest rate hikes. Furthermore, investors and real estate companies can use this to predict interest rate inflection points and optimize financing and investment decisions.

Although this study strives for comprehensiveness in variable selection and model setting, it is still limited by data frequency and potential omitted variables (such as exchange rate and fiscal policy). Future research can further introduce high-frequency data and nonlinear models (such as TVP-VAR, LSTM) to more finely characterize the dynamic response mechanism of interest rates.

References

- [1] Liu J. Q., & Liu W. X. (2024). Theoretical logic and reform direction of China's policy innovation in the new era. *Modern Economic Research*, (01), 1-10.
- [2] Holston, K., Laubach, T., & Williams, J. C. (2017). Measuring the natural rate of interest: International trends and determinants. *Journal of International Economics*, 108(S1), S59-S75.
- [3] Shi Z. H. (2024). The Natural Interest Rate in Monetary Policy and Its Estimation, Tianjin University of Finance and Economics.
- [4] Chen Kaipu. (2022). Measurement and Research on the Influencing Factors of China's Natural Interest Rate, Nankai University.
- [5] Tan X. F., & Yao Y. (2025). The Construction of Interest Rate Corridor: International Practices China's Path and Policy Implications. *Credit*, 43(06), 56-67.
- [6] Xue R. (2016). Research on the effectiveness of the Shanghai Interbank Offered Rate (Shibor) a benchmark interest rate, Beijing Forestry University.
- [7] Liu Y. (2024). Analysis of interest rate transmission mechanism and LPR policy effect under the perspective of interest rate marketization reform. *of Financial Development*. (12), 57-67.
- [8] Zhang P. P. (2025). The Evolution, Challenges and Policy Suggestions of Interest Rate Marketization in China. *Modern*, (11), 118-122.
- [9] Xu Y. & He Y. (2021). Research on the Effectiveness of the Transmission of Monetary Policy Interest in China under the Impact of Federal Open Market Committee's Monetary Policy Shocks—Based on the TVP-VAR Model. *Journal of Financial and Economic Theory*, (05), 55-65.
- [10] Industrial and Commercial Bank of China Financial Markets Department. (2025). Review and Prospect of Recent Financial Market Trends. *Modern Financial Guide*, (06), 44-46