

The Research on the Medium-term Lending Facility of PBOC

Zicheng Zhao^{1,*}, Jie Lin², Bolin Wang³, Zihao Qiu⁴

¹*Oaks Christian High School, Westlake Village, CA 91362, The United States*

²*Oaks Christian High School, Westlake Village, CA 91362, The United States*

³*School of Economics, Sichuan University, Chengdu, Sichuan 610065, China*

⁴*The Affiliated Tianhe School of Guangdong Experimental Middle School, Guangzhou, Guangdong 510650, China*

**zcc20040412@126.com*

ABSTRACT

At present, China's economy is facing a stage of reform, in which the changes in the social financing structure are the most significant. In order to improve the liquidity and stability of traditional monetary policy, the People's Bank of China has proposed the Medium-term Lending Facility. The research of this article combs and analyzes the monetary policy of Medium-term Lending facility. The reasons for its occurrence, its characteristics, as well as its influence are introduced in detail, and data analysis is used to prove it. At the end, the article also put forward suggestions for future development changes.

Keywords: *MLF, Monetary Policy, China's Economy, People's Bank of China.*

1. INTRODUCTION

The medium-term lending facility is a monetary policy tool provided by the Central Bank of China with medium-term base money supply [1]. It was first launched in 2014 to expand the range of monetary policy instrument at PBOC's disposal. PBOC engage in MLF operation when appropriate each month based on the liquidity demand circumstance of financial institutions, to expedite stable economic growth and ensure the base money supply. It is targeted at commercial banks and policy banks that meet the requirements of macro-prudential management and can be launched through bidding. Medium-term lending facilities are issued in the form of pledge, and financial institutions provide Treasury bonds, central bank bills, policy-based financial bonds, high-grade credit bonds and other high-quality bonds as qualified pledges [1]. Based on the "2017 Forth Quarter Monetary Policy Implementation Report", MLF was viewed as "key channels" for the base money supply. This instrument saw a rapid increase in outstanding balance, registered to RMB 5.1 trillion at the end of 2020 [2].

2. THE REASON OF INVENTION OF MLF

2.1. Stimulating the development of SMEs

The small and medium-sized enterprises (SMEs) are currently the largest market for job creation in China, occupying 99.5% of companies in China and providing more than 75% of the job opportunities in the market [3]. This characteristic naturally gets the attention of the Chinese government. The introduction of a monetary policy that facilitates medium-term lending encouraged commercial banks to issue more loans to SMEs, and reducing the financing costs of SMEs, and further supporting the development of SMEs.

2.2. Maintaining the health of financial markets

Because the market economy relies on the great uncertainty of the environment, the commercial banks will experience vicious events such as an increase in the number of bad debts, leading to bankruptcy of banks or small and medium-sized enterprises. The monetary policy of medium-term lending facility has helped commercial banks to share a certain amount of debt pressure on a certain basis by allowing commercial banks to mortgage bonds and other behaviors, thus accelerating

the recovery of the market economy.

2.3. Supporting the liquidity and stability of the banking system

More than 20 years, PBOC have mainly rely on expansion in funds outstanding for foreign exchange, raising the reserve ratio and other conventional tools to withdraw money. However, it faces an opposite circumstance today, such as a contraction in funds outstanding for foreign exchange or reduction in reserve ratio, and thus needing to release liquidity via new types of monetary policy tools. The monetary policy that facilitates medium-term borrowing can provide a long-term and stable source of funds for the social economy and help China's national economy report a neutral and moderate level of liquidity.

3. THE MECHANISM AND CHARACTERISTICS OF MEDIUM-TERM LENDING FACILITY

3.1. The Mechanism of MLF

The People's Bank of China is the central bank of the People's Republic of China and a branch of the State Council. It is a financial institution that formulates and implements monetary policies under the leadership of the State Council. MLF is a monetary policy tool created by the People's Bank of China in September 2014. The main operating mechanism of MLF is a commercial bank (a type of bank that mainly deals with deposits, loans, exchange, savings, etc.) or a policy bank (specialized, non-profit-making financial institutions established by the government to carry out the government's economic policies and conduct financial business in a specific area) that meets the requirements of prudential management provide qualified collateral to the Central Bank for a period of 3 to 12 months, which is generally agreed upon by the central bank, at interest rates set by the central bank. The central bank then gives the money to commercial or policy banks. The banks then make loans to the companies that need the money.

3.2. The characteristic of MLF

3.2.1. Characteristic of loan form

Commercial banks have changed from making long-term loans by borrowing short-term funds multiple times to borrowing funds only at once. Under normal circumstances, it is known as maturity mismatch when commercial banks issue long-term loans to customers by borrowing short-term debt at the money market. Commercial Banks need to borrow a new short-term debt again to maintain the long-term loan after the previous short-term funding expires. In this way, commercial banks need to borrow short-term funds frequently but

suffer short-term interest rate risk and certain cost. In the case of MLF, commercial banks do not need to borrow funds so frequently to issue long-term loans and are able to issue more long-term loans with less risks, because MLF is characterized by a longer period than normal lending instruments.

3.2.2. Characteristic of Loan Cycle

Another characteristic of MLF lending is that the term of the loan is slightly longer than that of the standing lending facility (SLF), generally 3 months, 6 months or 12 months, and the interest rate will be re-agreed near the maturity to roll-over the loan. Commercial banks can borrow from the central bank and the interest rates are set by the central bank with the term of 3, 6 or 12 months, and they could further issue the loan to customers after receiving the central bank's loan [3]. Upon the maturity, commercial Banks can still borrow the same amount of loan based on the new rates.

3.2.3. Characteristic of Loan Target

MLF has certain requirements for the target of loans. It tends to grant loans to agriculture, rural areas, and small and micro enterprises, to provide relatively lower cost, longer term, and stable sources of funds to agriculture, rural areas, and small and micro enterprises, to reduce financing costs and stimulate the economy [2].

4. THE EFFECTS OF MLF

4.1. The impact on the money supply

The money supply will increase. MLF can work as a tool to free up monetary aggregates for PBOC, which means PBOC has more channel for the base of money supply, which can provide market liquidity.

4.2. The impact on banks, insurance companies, securities companies

MLF plays the role of "medium-term policy interest rate" to guide financial institutions to provide low-cost funds to the real economy sector in accordance with national policy guidance [4], to promote the reduction of social financing costs. This is good for financial stocks, banks, insurance companies and securities firms, because on the one hand, their financing costs are low, and on the other hand, these financial companies have invested in a lot of other companies, so both sides can improve their performance.

4.3. The impact on small and micro enterprises

Because MLF can guide financial institutions to provide low-cost funds to the real economy sector in accordance with national policies, PBOC can reduce the

financing cost of small and micro businesses and promote their development through this move. Especially for some high-tech industries and technology enterprises (e.g. information technology, biomedicine, high-end manufacturing, etc.), these enterprises are characterized by high investment, high output, rapid growth in performance, and at the same time, the debt will also rise. By doing so, the central bank can lower the cost of financing and encourage them to grow better.

4.4. The impact on interest rates

MLF is to ensure a reasonable supply of medium - and long-term liquidity, and play the role of signaling and guiding medium-term policy interest rates [5]. What's more, MLF also contributes to the LPR (the interest rate paid to buy a home by adding a dot to MLF interest rate). So, if MLF rate falls, the LPR rate may also fall in the future.

5. EMPIRICAL ANALYSIS

According to the general theory, MLF policy can reduce interest rates in the lending market to a certain extent. In order to better analysis the regulation effect of MLF, this part will use the method of econometrics to establish an empirical model and analyze the regulation effect of MLF on the money market interest rate from a quantitative point of view.

5.1. The Linear Regression Model

The explanatory variable is the interest rate, and the explanatory variable is the balance of MLF. In order to control the influence of other factors on dependent variables, control variables other than explanatory variables should be added. The measurement model is set as follows: $Y_t = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4 + \varepsilon_t$ [4]

Where Y_t is the reference lending rate -- Shibor, X_1 is the balance of MLF, X_2, X_3, X_4 is the control variable, and ε_t is the random disturbance term.

5.2. The Variables

SHIBOR: 20-day average of the last trading day of each month from April 2015 to February 2021

Balance of MLF: from April 2015 to February 2021 according to PBOC website

CPI: from April 2015 to February 2021 according to China National Bureau of Statistics website

LIBOR: 20-day average of the last trading day of each month from April 2015 to February 2021

Exchange Rate(USDCNY): from April 2015 to February 2021

5.2.1. Explained variable -- Shanghai Interbank Offered Rate (SHIBOR)

The Shanghai interbank offered rate is the arithmetic average rate calculated and determined by the RMB interbank offered rate independently quoted by banks with higher credit rating. It is simple interest, unsecured and wholesale rate, and there are mainly eight kinds of Shanghai interbank offered rate. Considering that this paper studies the regulation effect of MLF, the Shanghai interbank offered rate with terms of Overnight and semi-annual are selected as the interest rate variables to study the impact of MLF on short-term and medium-term interest rates respectively.

5.2.2. Explanatory variable -- balance of MLF

Medium-term Lending Facility (MLF) refers to the monetary policy tool provided by the central bank to provide medium-term base money. It was founded by the People's Bank of China in September 2014. Its main function is to meet the large liquidity needs of financial institutions with longer maturities. The MLF provides liquidity support to financial institutions such as policy banks and national commercial banks in the form of collateral.

As can be seen from the chart 4.1 below, since April 2015, the balance of MLF at the end of each period still shows an overall upward trend, although it shows a small decline in some reporting periods. From April 2015 to April 2016, the balance of MLF experienced a trend of first decrease and then increase. Since April 2016, the outstanding MLF has seen a significant increase, reaching 4,917 billion yuan in March 2018, more than 12 times that of 2015. Since then, the balance of MLF has been in a high and fluctuating state, reaching 5.35 trillion yuan in February 2021. On the whole, China's balance of MLF has been relatively abundant in recent years, which is conducive to guiding capital flow to the real economy to meet medium - and long-term capital needs and provide low-cost capital to areas supported by national macro policies.



Figure 1 The trend of MLF and its growth rate

5.2.3. Control variable

Since the nominal interest rate will be affected by inflation at the same time, and the CPI is used as a measure of the level of inflation by many countries, we add the consumer price index (CPI) as the control variable to take the effect of the rate of inflation into account [4].

The interest rate of a country will also be affected by the international interest rate, so we choose the London Interbank Offered Rate (Libor) as the second control variable. Besides, the exchange rate can affect the interest rate indirectly by influencing the domestic price level and short-term capital flow, as a result, the exchange rate

between US dollar and RMB is selected as the third control variable.

5.3. Data

Based on the data collected from National Bureau of Statistics and the website of Shanghai Interbank Offered Rate, the description summaries are shown below. Shibor (Overnight) is used to represent the short-term money market interest rate while Shibor (Semi-annual) is used to represent the short-term money market interest rate.

5.3.1. Data of study the effect of MLF on short-term interest rates.

Table 1 Description Summary of Regression 1

Variable	Obs	Mean	Std. Dev.	Min	Max
SHIBORON	71	3.319	0.763	1.499	4.809
LNMLF	71	10.263	0.695	8.243	10.894
CPI	71	102.061	1.077	99.500	105.400
LIBOR	71	1.431	0.827	0.206	2.889
EX	71	6.689	0.265	6.114	7.099

5.3.2. Data on the effect of MLF on medium-term interest rates.

Table 2 Description Summary of Regression 2

Variable	Obs	Mean	Std. Dev.	Min	Max
SHIBORON	71	2.120	0.447	0.977	2.822
LNMLF	71	10.263	0.695	8.243	10.894
CPI	71	102.061	1.077	99.500	105.400
LIBOR	71	1.431	0.827	0.206	2.889
EX	71	6.689	0.265	6.114	7.099

5.4. Empirical results

5.4.1. The effect of MLF on Shibor(Overnight)

Table 3 Regression analysis of MLF on Shibor (Overnight)

Explanatory variable	Coef.	t-value	p-value
LNMLF	0.143 (0.09)	1.60	0.115
CPI	-0.11** (0.051)	-2.17	0.034
LIBOR	0.308*** (0.064)	4.81	0
EX	-0.167 (0.237)	-0.70	0.484
Constant	12.59** (4.765)	2.64	0.01
Statistics & ANOVA			
R-squared	0.422	Number of obs	71.000
F-test	12.069	Prob > F	0.000
Akaike crit. (AIC)	57.150	Bayesian crit. (BIC)	68.463
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$			

The coefficient of MLF is positive but the effect is very small, and the null hypothesis cannot be rejected at 5% significant level, so it is not statistically significant. It can be explained that the balance of MLF has no effective effect on the benchmark short-term lending rate.

5.4.2 The effect of MLF on Shibor (Semi-annual)

Table 4 Regression analysis of MLF on Shibor (Semi-annual)

Explanatory variable	Coef.	t-value	p-value
LNMLF	0.433*** (0.15)	2.88	0.005
CPI	-0.066 (0.085)	-0.78	0.44
LIBOR	0.257** (0.107)	2.39	0.02
EX	-2.027*** (0.398)	-5.10	0
Constant	18.85** (7.987)	2.36	0.021
Statistics & ANOVA			
R-squared	0.443	Number of obs	71.000
F-test	13.141	Prob > F	0.000
Akaike crit. (AIC)	130.499	Bayesian crit. (BIC)	141.813
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$			

It can be seen from the regression analysis results that the MLF balance has a significant impact on the medium-term lending rate, but the coefficient is positive, which is contrary to the policy goal of the MLF tool – to reduce the medium-term lending cost. Therefore, it can be seen that the development of MLF in China still needs to be improved.

5.5. Analysis and Summary

According to the regression analysis results above, it can be seen that the increase of MLF balance did not perform well enough to reduce the short-term and medium-term lending rates in China from 2015. It could also be seen from the Chart 4.2 and Chart 4.3 below that

the variation trend of MLF balance and SHIBOR has not apparent relationship in most time periods. (In Chart 5.1 and Chart 5.2 below, the sections marked in red are the phases where MLF and SHIBOR changes are in obvious negative relationship). It's seen that the MLF is still in the stage of exploration and development in Chinese financial market, which needs continuous improvement and development to achieve the ultimate purpose of reducing interest rate. As a result, PBOC usually use MLF with other tools to adjust interest rates in the lending market to better achieve the goals of monetary policy.

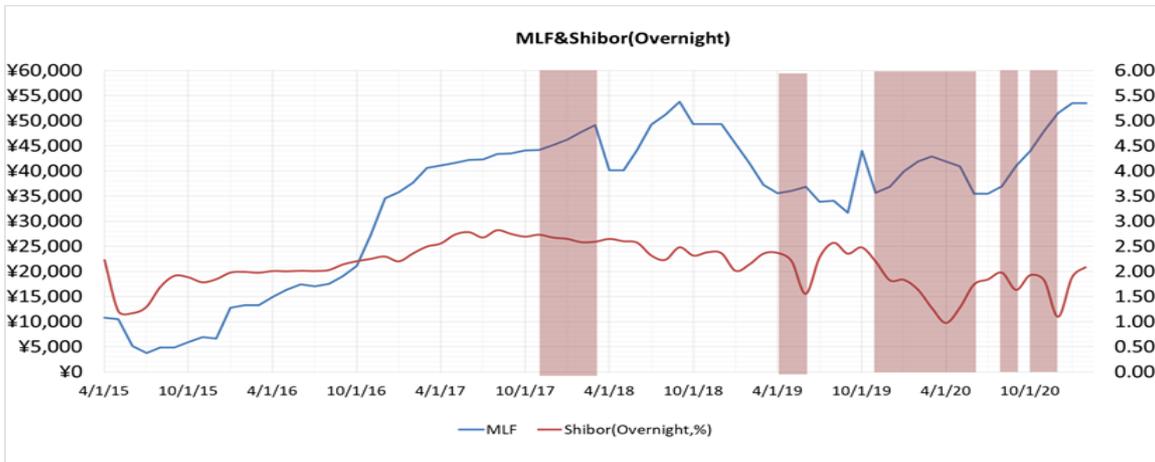


Figure 2 The trend of MLF vs. Shibor(Overnight)

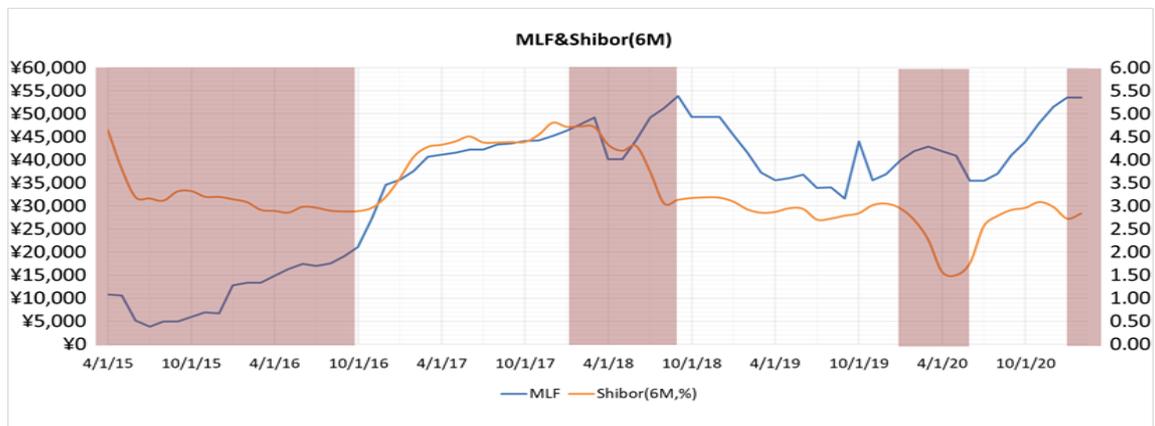


Figure 3 The trend of MLF vs. Shibor (Semi-annual)

6. THE FUTURE OF MLF

2020 is a very special year for the Chinese economy. Under the double blow of the deterioration of Sino-US relations and the Covid-19 epidemic, China's GDP loss in the first half of the year is expected to exceed 159 billion US dollars, which is equivalent to a decrease of 1.2% of GDP. Even when the domestic epidemic is well controlled, and the factories have resumed to work, GDP has only achieved a year-on-year growth of 2.3% [6].

Therefore, to stimulate and revive the economy as quickly as possible, some problems need to be fixed more quickly.

The medium-term lending facility is a monetary policy tool created by the Central Bank in September 2014 to provide a medium-term base currency. The significance is that for commercial banks and policy banks that meet the requirements of macro-prudential management, low-interest loans are issued by pledge to provide high-quality bonds such as treasury bonds,

central bank bills, policy financial bonds, and high-grade credit bonds as qualified pledges. Due to the short establishment time, the entire framework needs to be changed.

First, expand the service scope of the medium-term lending facilitation policy. At present, medium-term lending facilities are only issued to commercial banks and policy banks that meet the requirements of macro-prudential management, without the participation of any financial institutions, and lack of activity. Therefore, the government needs to promote this monetary policy more vigorously and cooperate with more financial institutions to further stimulate economic development.

Second, the scope of collateral is expanded. At present, the medium-term lending facility only accepts high-quality bonds such as mortgage treasury bonds, central bank bills, policy financial bonds, and high-grade credit bonds. Compared with many European and American countries that accept non-tradable bonds and asset-backed transaction bonds, the scope is relatively small. The Chinese government needs to appropriately expand the scope of collateral while maintaining risks to promote the creation of greater value for lending tools.

Third, optimize the service targets of the targeted medium-term lending facilitation policy. At present, due to the uncertain factors generated by small and medium-sized enterprises under the impact of the epidemic and other shocks, many financial institutions have adopted a loan-saving style, making it increasingly difficult for small and medium-sized enterprises to raise funds. The government should encourage financial institutions to lend by strengthening information communication with financial institutions, increasing support for real economy funds, and extending the operation period to encourage financial institutions to lend and amplify the role of medium-term lending convenience.

7. CONCLUSION

As a special monetary tool at the beginning, MLF can effectively improve the liquidity of money in the economic market and stabilize the economy. Its status in monetary tools has been gradually promoted, and it is highly likely to be developed into a permanent monetary tool in the future

REFERENCES

- [1] (2021). Pbc.gov.cn.
<http://www.pbc.gov.cn/zhengcehuobisi/125207/125213/125446/125870/2809123/index.html>
- [2] (2021). Pbc.gov.cn.
<http://www.pbc.gov.cn/zhengcehuobisi/125207/125213/125443/index.html>
- [3] http://pdf.dfcfw.com/pdf/H3_AP202008071396959978_1.pdf
- [4] Wu Fan. Research on the Effect and Effectiveness of China's Lending Facility Regulation. (Doctoral dissertation, Capital University of Economics and Business).
- [5] MLF reappearance to do more than the central bank to "replenish water" operation power - xinhuanet. (n.d.). www.xinhuanet.com. Retrieved May 6, 2021, from http://www.xinhuanet.com/fortune/2020-08/18/c_1126379359.htm
- [6] Hundreds of billions of "spicy powder", the central bank year-end big money! _ Encyclota said. (n.d.). [Baike.baidu.com](http://baike.baidu.com). Retrieved May 6, 2021, from <https://baike.baidu.com/tashuo/browse/content?id=3e534ed056744146fa542812>