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Is Price-Based Monetary Policy Effective?—Empirical Evidences from the Data during COVID-19

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Abstract: *After the reform of mechanism of exchange rate, our country's central bank's monetary policy regulatory framework has gradually transformed from a quantitative framework to a price-based framework. However, the academic circles have different views on the effectiveness and applicability of these two monetary policy frameworks. In order to verify the effectiveness of price-based monetary policy, this article used the data during the period of the COVID-19 to conduct empirical tests. We found that price-based monetary policies can effectively smooth out macroeconomic fluctuations and promote stable economic development. Moreover, we propose that in order to further accelerate economic recovery, the central bank should take measures such as lowering the benchmark interest rate.*

Keywords: *Price-based Monetary Policy, COVID-19, Financial Stability, Quantitative Monetary Policy*

1. Introduction

With the acceleration of the global economic cycle and the intensification of the risks of the international economic system, monetary policy, as the main means of the central bank to regulate the macro-economy, plays an increasingly important role in stabilizing the macro-economic operation and promoting economic growth. The effectiveness of monetary policy can be defined as: through the operation of monetary policy tools and through the good transmission mechanism of monetary policy, the central bank achieves the expected final policy goal. But there has been debate in academia about the effectiveness of monetary policy. Throughout the classical theories related to money, those who advocate the ineffectiveness of monetary policy are mainly the classical school and the rational expectations School, while those who advocate the effectiveness of monetary policy are mainly Keynes, the Swedish School, the neoclassical synthesis school and the monetarist School. According to the classical school, an increase in the quantity of money can only lead to a proportional increase in prices, and has no effect on real economic variables such as output. The rational expectations school represented by Lucas put forward the view that macro policies are completely ineffective based on the assumptions such as rational expectations. On the contrary, Keynes proposed the effectiveness of monetary policy from the perspective of interest rates; Friedman proposed the validity of monetary policy on the basis of natural rates and adaptive expectations.

However, no matter what the academic debate on monetary policy is, the frequent use of monetary policy in various countries' economic regulation and control, and the widespread existence of monetary policy has been an indisputable fact. At the same time, although monetary policy has widely become an important means for central banks to regulate macroeconomic operation, but with the change of economic environment, the applicability of traditional quantitative monetary policy tools has been greatly reduced. Based on their national conditions, central banks have created many new monetary policy tools based on price, and have begun or completed the transformation of monetary policy regulation framework from quantitative monetary policy regulation framework to price monetary policy regulation framework.

The so-called control path of price-based monetary policy means that the central bank acts on the money market by setting the policy interest rate to affect the change of the money market interest rate, which in turn will cause the change of the price of the credit market and the bond market, and then guide the economic behaviors of micro subjects such as residents and enterprises, and finally achieve the purpose of macroeconomic regulation.

Compared with quantitative monetary policy tools, the existing literature holds that price-based monetary policy tools have the following advantages: first, price-based monetary policy tools are more stable. Ma constructed a new Keynesian dynamic general equilibrium model, compared and analyzed the

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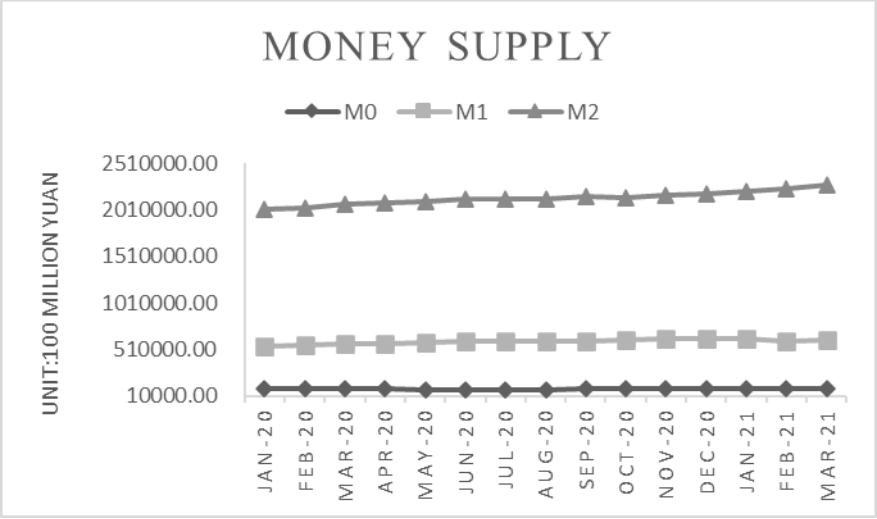
macro-control performance of quantitative instruments and price-based instruments, and found that the macro-control of price-based instruments was less affected by the change of structural parameters and relatively stable[1]. Second, the interest rate index has a stronger signal function, can be quickly transmitted to the market players, with a short lag time. Han and Liu built a four-variable SVAR model and found that compared with quantitative regulation, price-based regulation has such advantages as short time delay and mild intensity[2]. Third, the two monetary policy tools have their own applicability. Zhang et al. believes that price-based tools are more suitable for suppressing economic overheating when the economy is surging[3]. Bian and Hu, and Zhang showed that price-based monetary policy tools were more effective in smoothing out economic fluctuations in the short term[4] [5]. Fourth, Gali proposed that price-based monetary policy tools would cause smaller welfare losses[6].

Major strategic achievements have been made in the prevention and control of COVID-19, but China's economic development has still suffered a huge impact due to the impact of the epidemic. The shock comes not only from the demand side but also from the supply side. Based on individual tracking survey, Cai et al. found that the return to work rate of Chinese practitioners in 2020 was only 63.1% at the beginning of March and only recovered to 89.7% at the end of November[7]. At the same time, although the surveyed urban unemployment rate at the end of 2020 is 5.2%, this data does not include the unemployment of migrant workers, etc. Urban residents can telecommute, but migrant workers cannot, so the overall national unemployment rate is still not optimistic. Low return to work and high unemployment lead to shortages on both the supply and demand sides. In addition to the impact of the labor market, on the supply side, due to the prevention and control needs during the epidemic period, the short-term traffic and logistics disruptions and the delayed resumption of production by enterprises also have a huge impact on China's production. On the demand end, even though the recovery speed of domestic demand is relatively fast, the foreign export is blocked, which seriously affects the recovery time of the total demand. However, from the observation of Figure 1, we can see that the quantity of M0, M1 and M2 from January 2020 to March 2021 shows the following trend: M0 remains stable on the whole, and there is no significant increase, and people's deposits do not decrease sharply. That is, there is no liquidity trap in China during the COVID-19 outbreak, and monetary policy is still effective under the traditional Keynesian view. At the same time, He et al. found in the study that although the novel coronavirus outbreak had a certain degree of negative impact on consumer confidence, the impact was structural, and the consumer confidence of the main consumer group increased[8].



Data source: The People's Bank of China

Figure 1: The Money Supply during 2020/01 - 2021/03

Meanwhile, during the period of COVID-19, the central bank adopted a series of macro-control measures to cope with the impact of the epidemic and speed up economic recovery. In 2020, the central bank carried out 16 lending facility operations, 12 LPR operations and bill swaps, 5 targeted RRR cuts, 8 bilateral currency swap agreements, and created the GSP Loan Extension Support Facility for small and micro businesses and the GSP credit Loan Support Program.

If the regulation of price-based monetary policy plays a role in the face of supply and demand shocks, then it means that price-based monetary policy is indeed effective. The purpose of this paper is to explore whether price-based monetary policies are effective, and the impact of the novel coronavirus outbreak provides an opportunity to observe the effectiveness of price-based monetary policies. Therefore, this

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paper will focus on the data during the COVID-19 period. The arrangements of the following sections are as follows: the second section introduces the main price monetary policy tools; The third section is the empirical part, designing the econometric model and explaining the construction of key variables. The fourth section is the empirical results and correlation analysis, and tries to answer the question of the effectiveness of the price-based monetary policy. The last section is the summary and some policy suggestions.

2. Price-based Monetary Policy Tools

Price-based monetary policy mainly refers to the monetary policy that changes asset prices through the transmission mechanism of interest rate or exchange rate to affect the asset composition and wealth changes of micro subjects, and then realizes the ultimate goal through the self-regulation of micro subjects. Therefore, the so-called price-based monetary policy tools are mainly interest rate tools and exchange rate tools. Therefore, the policy tools suitable for taking interest rate or exchange rate as intermediary targets will be introduced in this section.

2.1. Interest Rate Related Instruments

2.1.1. Interest Rate Policies

Interest rate policy means that the central bank adjusts the interest rate level and structure through interest rate tools according to the needs of the implementation of monetary policy, thus affecting the supply and demand of social funds.

The interest rate tools available to the central bank are: first, the benchmark interest rate, including the relending/rediscount rate, second, the deposit reserve ratio and the excess deposit reserve ratio; Legal deposit and loan rates; third, formulate relevant policies to adjust the structure and grade of various interest rates. But with the reform of interest rate liberalization, the indirect control of interest rate will become the main stream.

In 2015, the ceiling on deposit interest rates of commercial banks and rural cooperative financial institutions was lifted, indicating that China's interest rate control has been basically lifted. In 2019, in order to solve the "dual-track interest rate" problem of the coexistence of the benchmark loan interest rate and the market interest rate, the central bank improved the formation mechanism of the market quoted loan interest rate (LPR), so as to improve the marketization degree of LPR, give full play to the guiding role of LPR on the loan interest rate, promote the "two-track integrated track" of the loan interest rate, and improve the transmission efficiency of interest rate. We will lower financing costs for the real economy.

2.1.2. Standing Lending Facility (SLF)

Established in 2013, the Standing Lending Facility is a normal liquidity supply channel of the People's Bank of China, and its main function is to meet the large liquidity needs of financial institutions with a long term. The targets are mainly policy banks and national commercial banks. The term is 1-3 months. The interest rate level is determined comprehensively according to the needs of monetary policy regulation and guiding market interest rates. The standing lending Facility is issued as collateral, with qualified collateral including high credit rating bond-like assets and prime credit assets.

The creation of SLF further enriched the short-term liquidity management toolbox. As a supplement to the open market operations, SLF can effectively deal with the liquidity and seasonal fluctuations caused by the sudden changes in the financial market environment. Moreover, SLF implements on-demand supply and is initiated by financial institutions, which can apply according to their own liquidity situation. And it is generally believed that our country is constructing its own interest rate corridor, and the upper limit of the interest rate corridor is the seven-day SLF rate.

2.1.3. Medium-term Lending Facility (MLF) and Targeted Medium-Term Lending Facility (TMLF)

In September 2014, the Central bank created the medium-term lending Facility to provide medium-term base money to commercial banks and policy banks that meet the requirements of macro-prudential management. The issuance method shall be pledge, and high-quality bonds such as national bonds, central bank bills, policy financial bonds and high-grade credit bonds shall be provided as qualified pledges.

The MLF plays a similar role to the SLF, but as a medium-term liquidity management tool, it is better

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able to stabilize market expectations. MLF is also launched against the background of declining foreign exchange funds outstanding. On the one hand, it can make up for the declining liquidity caused by the decline of foreign exchange funds outstanding in the market. On the other hand, the medium-term lending facility rate can play the role of medium-term policy interest rate and build a medium-term interest rate control mechanism. MLFS typically have a duration of three to twelve months, with three, six and twelve months being the most common.

In order to increase financial support for small, micro and private enterprises, the People's Bank of China established the Targeted Medium Term Lending Facility (TMLF) in December 2018, providing financial institutions with a long-term and stable source of funds according to the growth of their loans to small, micro and private enterprises. The TMLF is more policy-oriented. The general term is one year, but it can be renewed for three years.

2.1.4. Repo Transactions

Repo transactions are divided into reverse repo transactions and forward repo transactions. Repo transactions are conducted between the central bank and primary dealers, with forward repo transactions being sell and buy and reverse repo transactions being buy and sell. When the central bank purchases securities from primary dealers, it increases the money supply and releases liquidity; On the contrary, it is to withdraw the base money and reduce liquidity.

In a repurchase agreement bid at interest rates, if the central bank does not announce the required amount of auctions, the central bank may decide the allocation amount based on the tender offer that produces the targeted quantity or price, a procedure that retains sufficient flexibility for both price and quantity targets .

2.1.5. Short-term Liquidity Adjustment Facility (SLO)

This monetary policy tool is a structured monetary policy tool designed to be used in the event of temporary fluctuations in the liquidity of the banking system as a necessary supplement to regular open market operations. At the same time, it is also a monetary policy instrument based on price, because it is auctioned in the way of interest rate bidding.

Among all the maturity types of SLO, short-term repurchase within 7 days is the most important. SLO, including forward repo and reverse repo, can be extended appropriately during holidays and is carried out through market-based interest rate bidding. In principle, SLO should be used during the intermittent periods of regular open market operations, and the target is some financial institutions that are systemically important, with good asset status and strong policy transmission ability among the primary dealers of open market business. Therefore, the creation of SLO not only helps the central bank to effectively regulate short-term capital supply in the market, iron out large fluctuations in market capital supply and demand caused by sudden and temporary factors, promote the smooth operation of the financial market, but also helps to stabilize market expectations and effectively prevent financial risks.

2.2. Exchange Rate Related Instruments

Exchange rate regulation is the main means for a country to achieve the balance of international payments in an open economy. The transmission of monetary policy through exchange rate mainly has two ways: the impact of exchange rate on net export and the impact of exchange rate on balance sheet; The transmission path of exchange rate mainly affects the local currency prices of imported goods, thus affecting the quantity of imported goods. Meanwhile, the price and quantity of exported goods will also change.

Therefore, under the price-based monetary policy, exchange rate related tools are mainly the choice of exchange rate regime, exchange rate formation mechanism and exchange rate quotation method, while the traditional bilateral currency swap agreement is still a quantitative tool in theory. In respect of exchange rate system choice, since july 21, 2005, what our country begins to execute is foundation, reference with market supply and demand one basket money undertakes modulatory, the floating rate system that has managed.

In recent years, the Chinese central bank has constantly improved the formation mechanism of the people's exchange rate. It also emphasized the strengthening of reference to a basket of currencies to better maintain the basic stability of the RMB exchange rate against a basket of currencies; The formation mechanism of the central parity rate of the RMB against the US dollar has also been continuously improved. Since the first quarter of 2016, the pricing mode of the central parity rate of the RMB against

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the US dollar has been adjusted to the pricing mode of "closing price plus a basket of exchange rates". The market-oriented reform of the RMB exchange rate is making steady progress, and the influence of market supply and demand on the RMB exchange rate is increasing. All these reforms are aimed at improving China's exchange rate regulation mechanism. However, there are still imbalances in China's exchange rate regulation at present: compared with the equilibrium real exchange rate, some real exchange rates of RMB are overvalued quarterly, while others are undervalued quarterly. The same is true of the long-run equilibrium real interest rate.

3. Empirical Design and Construction of Key Variables

This paper will test the effectiveness of price - based monetary policy from five aspects. Because although the objectives of monetary policy are generally considered to be: economic development, price stability, full employment and international balance of payments; However, in recent years, the importance of financial stability has been increasingly emphasized by scholars. Some scholars have proposed to take financial stability as one of the goals of monetary policy. Therefore, this paper will also try to test the effectiveness of price-based monetary policy from the perspective of financial stability.

3.1. Empirical Model Design

The panel model is used in this paper, but in order to eliminate the impact of quantitative monetary policy and fiscal policy, these two policies are taken as control variables. Considering that the price monetary policy and quantitative monetary policy influence each other in reality, and the central bank of our mixed use, so it is added to the interaction. The model is as follows:

$$Y_{it} = \beta_0 + \beta_1 PRI_{it} * QUI_{it} + \beta_2 * PRI_{it} + \beta_3 * QUI_{it} + \sum \beta_k CON_{k,it} + \varepsilon_{it} \quad (1)$$

Where, Y is our explained variable, used to measure the four objectives of monetary policy and financial stability; PRI is an explanatory variable, that is, a monetary policy instrument based on price. CON is a control variable, which mainly includes quantitative monetary policy tool QUI and fiscal policy tool.

3.2. Key Variables Construction and Data Source Description

3.2.1. Policy Variables (Including Control Variables)

The policy variables include the price monetary policy instrument (denoted PRI) as the core explanatory variable, the quantitative monetary policy instrument (denoted QUI) and the fiscal policy instrument (denoted FII) as the control variable.

Price based monetary policy instrument (PRI). In 2019, China's central bank began to reform and improve the market quotation rate (LPR) of financial institutions, and used LPR to guide the loan interest rate. LPR is based on the base interest rate, but the existing literature on the choice of the money market base interest rate discussion is inconsistent. Therefore, by referring to the policy direction in the documents released by the central bank in 2020 and considering the frequency of data comprehensively, this paper selects the one-month pledged repo rate (recorded as R1M) as the proxy variable of the price-based monetary policy tool. Data from China Foreign Exchange Trading Network.

However, the intermediate target of quantitative monetary policy is money supply. Therefore, referring to Xiao and Chen's practice, M2 growth rate is taken as the proxy variable of quantitative monetary policy tools[9]. Finally, in terms of the selection of proxy variables for fiscal policy instruments, this paper refers to the practice of Chen and Lin and adopts the proportion of real fiscal deficit in real GDP as the proxy variable of fiscal policy instruments[10]. However, since the Ministry of Finance does not release the separate data of January and February, but the cumulative value, this paper will take an average approach to processing. The data is from the wind database.

3.2.2. Explained Variable

Economic development (recorded as ECD). This paper refers to the practice of Guo and Jia, uses the output gap index, that is, the ratio of the difference between actual output and potential output to potential output, and uses the GDP deflator provided by the wind database to take the actual value[11] . However, in order to match the frequency with explanatory variables, Litterman interpolation was used to convert the frequency after the actual GDP was obtained, and the monthly real GDP was calculated. When the trend elimination method is used to estimate the output gap, the HP filtering method is used to extract

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the trend data. Since monthly GDP is used in this paper, the λ value is 14400. The data is from the wind database.

Price stability (PRS). In this paper, the sequential CPI data is selected as the proxy variable of price stability. The data is from the wind database.

Full employment (called FUE). This paper selects urban surveyed unemployment rate as the proxy variable of full employment. The data is from the wind database. Of course, as mentioned above, this is not a very good indicator, because it does not take into account the unemployment of migrant workers and other groups. However, considering the availability of data, this paper selects the surveyed urban unemployment rate as the proxy variable of full employment.

Balance of payments (recorded as BOP). This paper uses the sequential data of foreign exchange reserves as the proxy variable of the balance of payments. Monthly value of foreign exchange reserves = [(Foreign exchange reserves of this month - foreign exchange reserves of last month)/Foreign exchange reserves of last month]. Data source is the State Administration of Foreign Exchange statistical data list.

Financial Stability Composite Index (AFIS). The construction of financial stability index mainly refers to the China Financial Stability Composite Index constructed by Dai and Liu[12]. Considering the availability of data, this paper takes the monthly data from December 2019 to March 2021 as the research sample, selects 12 economic indicators in total, and constructs three sub-indexes. The financial soundness index was not built in this paper, because the data in this paper were monthly, while the financial soundness index built by Dai and Liu came from indissoluble quarterly data[12]. Finally, during the epidemic period, countries have greatly controlled the entry and exit of their borders, and their development is mainly driven by domestic demand. Therefore, the last index constructed in this paper is the domestic economic climate index rather than the world economic climate index. The specific indicators are shown in Table 1.

Table 1: Aggregate Financial Stability Index (ASFI)

Sub-index	Indicator	Symbol	Influence	Data source
FDI	Growth rate of social financing scale (month-on-month)	FD1	+	Wind Database
	Monthly new credit (month-on-month)	FD2	+	Choice
	Stock market value per GDP	FD3	+	iFinD
	Bond market value per GDP	FD4	+	iFinD
FVI	Rate of inflation	FV1	-	National Bureau of Statistics
	Budget deficit /GDP	FV2	-	Ministry of Finance
	Real Effective Exchange rate index _ broad _ Yuan	FV3	+	iFinD
	Loans/Deposits	FV4	-	iFinD
	Deposits /M2	FV5	+	iFinD
ECI	Consumer confidence index	EC1	+	Wind Database
	Investor confidence index	EC2	+	Wind Database
	PMI	EC3	+	Wind Database

Firstly, the Min-Max standardization method was adopted to standardize all the basic indicators in the above table. After standardization, all the index values were within the interval of [0,1], and the larger the obtained value, the more stable it was. Then use equal weight method to get each sub-index. Finally, each sub-index is weighted according to the number of basic indicators and the financial stability composite index is obtained by means of weighted average. The final calculation formula is:

$$AFSI = \frac{(4FDI + 5FVI + 3ECI)}{12} \tag{2}$$

The above weighted method can be used to obtain the comprehensive financial stability index of China, and its change trend during the epidemic period is shown in Figure 2. As can be seen from Figure 2, the sub-index only reflects one aspect of the composite index, so there are some differences in trend from the composite index. However, by comparing the data of the novel coronavirus epidemic, we can see that Wuhan needs to be "closed down" on January 23, 2020 for epidemic prevention and control. Before this point, all aspects of society mainly focused on the development opportunities brought by the Spring Festival holiday, but after that, the public began to pay extensive attention to the epidemic and showed a state of concern. The composite index also presents a trend of first rising and then falling at

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about this node. Since then, the epidemic situation has been grim. Until April, Wuhan was unsealed, and from May 7, 2020, there were no medium-high risk areas in China for the first time. The same composite index also declined over the same period. Subsequently, as China achieved remarkable results in epidemic prevention and control, the country vigorously resumed work and schools, and the situation gradually improved. Correspondingly, the financial stability composite index is also on the rise. Around the Spring Festival in 2021, the "Spring Festival effect" appeared again, and the AFSI index also showed a sharp rising trend again, and then slowly fell after the Spring Festival. However, the ASFI index shows a similar pattern as the market is still in good shape due to the introduction of vaccination measures. To sum up, the financial stability composite index constructed in this paper has a corresponding relationship with some major economic and social events, which has a certain rationality.

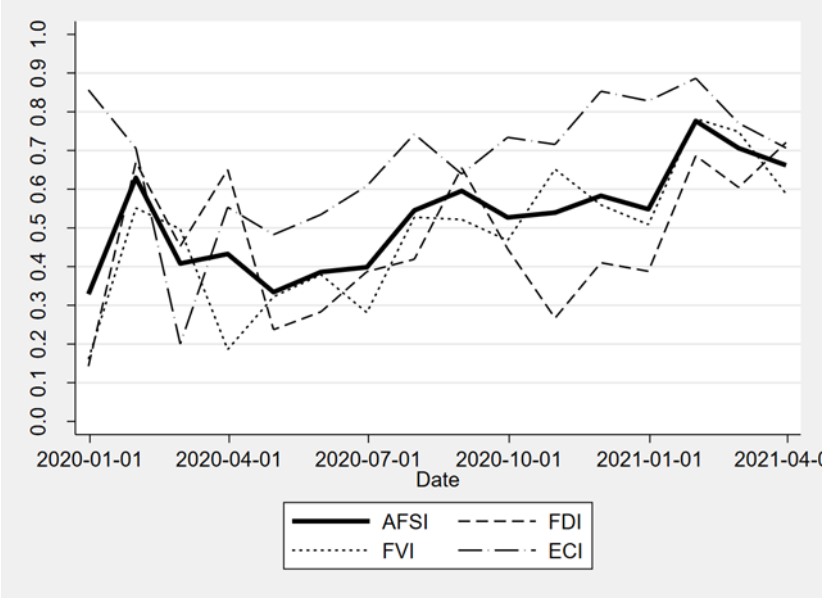

Figure 2: The Trend of Financial Stability Index

3.2.3. Other Control Variables

Exchange rate (recorded as EXR). In this paper, an exchange rate control variable will be added, and a comprehensive consideration of data availability and frequency will be given to choose one dollar equivalent to RMB (average) as the proxy variable of exchange rate. Data from the official website of the People's Bank of China.

A summary of all the variables used in this article is shown in Table 2.

4. Empirical Results and Analysis

4.1. Descriptive Statistics of Variables

Table 3 shows the descriptive statistics of the variables. The mean value of PRI is 2.6861, and the standard deviation is about 0.4582, which indicates that the change of each regulation of the monetary policy instrument based on price is small. This is mainly because the price monetary policy is a kind of price (interest rate or exchange rate) control, so the range of change under normal economic development conditions will not be too large. The standard deviation of the corresponding QUI is 10.25, which means that the quantitative monetary policy control changes greatly. The comparison of the two groups of data reflects the difference between our price monetary policy and quantitative monetary policy in regulation to some extent.

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Table 2: The Explanation of Variables

Variable	Symbol	Type	Description
Economic development	ECD	independent variable	Output gap = (real GDP- potential GDP)/ potential GDP
Stability of prices	PRS	independent variable	The CPI month-on-month data is used as the proxy variable of price stability
Balance of payments	BOP	independent variable	The sequential data of foreign exchange reserves is taken as the proxy variable of the balance of payments
Full employment	FUE	independent variable	Urban surveyed unemployment rate is selected as the proxy variable of full employment
Aggregate financial stability index	AFSI	independent variable	For a number of basic indicators to synthesize
Price-based monetary policy tools	PRI	dependent variable	The pledged repo rate of one month is used as the proxy variable
Quantitative monetary policy tools	QUI	control variable	M2 growth rate was used as the proxy variable
Instruments of fiscal policy	FII	control variable	(Fiscal expenditure - fiscal revenue) /GDP
The exchange rate	EXR	control variable	One dollar in RMB (average) was chosen as the proxy variable

Table 3: Summary Statistics of Variables

Variable	Sample	Median	Mean	Standard deviation	Minimum	Maximum
PRI	16	2.686	0.458	2.848	1.727	3.363
PRS	16	0.056	0.762	0.050	-1.200	1.400
AFSI	16	0.525	0.134	0.542	0.329	0.776
EXR	16	6.828	0.238	6.926	6.460	7.099
FII	16	-0.105	0.205	-0.075	-0.677	0.303
ECD	16	-0.468	1.566	-0.844	-4.075	2.526
QUI	16	0.101	0.009	0.103	0.084	0.111
BOP	16	0.002	0.009	0.003	-0.015	0.016

4.2. Regression Analysis

Detailed results of regression analysis are shown in Table 4.

4.2.1. Impact of Price-Based Monetary Policy on Economic Development

It can be seen from Table 4 that the regression coefficient of PRI variable is significantly negative at the significance level of 10%, that is, there is a reverse relationship between the output gap, the proxy variable of economic development, and the price-based monetary policy. Price-based monetary policy plays a role in smoothing out economic fluctuations during the epidemic.

4.2.2. Impact of Price-Based Monetary Policy on Price Stability

This paper uses CPI month-on-month data to measure price stability, and the empirical results show that when control variables are not added, the regression coefficient before PRI is significantly positive at the significance level of 5%, and PRI and CPI month-on-month data move in the same direction. It is in line with economic logic that an increase in PRI, the benchmark interest rate in the money market, leads to a rise in prices.

4.2.3. Impact of Price-Based Monetary Policy on Full Employment

This paper selects the urban surveyed unemployment rate as the proxy variable of full employment. The empirical results show that the regression coefficient of PRI variable is negative regardless of whether the control variable is added or not, which indicates that there is a negative relationship between PRI and urban surveyed unemployment rate, and reducing PRI can increase employment. The reason may be that with the decrease of PRI, the interest rate of the loan market will also decrease, and the financing cost of enterprises will decrease, so they are willing to increase the number of employees.

Of course, as mentioned above, variable FUE does not consider the unemployment of migrant workers and other groups, so it is not a very perfect indicator.

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4.2.4. The Impact of Price-Based Monetary Policy on the Balance of Payments

Variable BOP is defined in this paper as the sequential value of foreign exchange reserves. If the exchange rate control variable EXR is added to the empirical analysis, the effect of price based monetary policy is not significant. The results obtained by regression analysis with exchange rate variables EXR and BOP alone are not significant.

If the foreign exchange control variable EXR is not added, the regression coefficient of the variable PRI is significantly positive at the significance level of 10%, that is, raising the benchmark interest rate will increase foreign exchange reserves. One possible explanation is: Under the open economy, if the interest rate in the domestic market rises, the foreign funds will flow into the interest gradually. Under our current exchange rate system, the central bank will buy foreign currencies in order to stabilize the exchange rate in the foreign exchange market to release the local currency, thus increasing the foreign exchange reserve.

4.2.5. Impact of Price-Based Monetary Policy on Comprehensive Financial Stability

It can be seen from Table 4 that the regression coefficient of PRI is significantly negative at the significance level of 5%. That is, raising the benchmark interest rate reduced overall financial stability during the pandemic. It can be seen that in order for enterprises to resume production during the epidemic and tide over the difficulties, they need the support of national policies in financing and other aspects.

Table 4: Results of Regression

Varible	ECD	BOP	AFSI	PRS	FUE	FUE
PRI_QUI	280.641*	-1.369*	17.951**			
	(2.17)	(-1.93)	(2.28)			
QUI	-717.568*	4.434*	-53.984**			
	(-1.91)	(2.08)	(-2.35)			
PRI	-29.324*	0.151*	-1.937**	0.899**	-0.005***	-0.003*
	(-2.15)	(1.97)	(-2.32)	(2.40)	(-3.47)	(-1.96)
FII	3.700*		0.198*			-0.003
	(2.11)		(1.85)			(-1.08)
EXR	-0.980		-0.361**			0.005
	(-0.52)		(-3.12)			(1.58)
_cons	82.438*	-0.484*	8.844***	-2.359**	0.068***	0.031
	(2.21)	(-2.08)	(3.88)	(-2.32)	(18.39)	(1.34)
N	16	16	16	16	16	16
r2_a	0.410	0.129	0.698	0.241	0.423	0.488
F	3.085	1.740	7.924	5.775	12.019	5.762

Note: *, **, *** Indicate p ＜0.1, p ＜0.05, and p ＜ 0.01, respectively. T statistics in parentheses.

5. Research Conclusions and Policy Recommendations

5.1. Research Conclusions

With the continuous development of the global economy, the size of the economy is increasing, while the systemic risk of the market is also increasing. Moreover, economic development is constantly confronted with shocks from all sides, many of which are uncontrollable like the COVID-19 outbreak. In the face of various risks and shocks, it is necessary for central banks and governments to achieve stable economic growth. In this context, the effectiveness of monetary and fiscal policies has been widely discussed in the academic community. In recent years, our interest rate market has gradually opened up, and the framework of monetary policy regulation has undergone a transition. Thus, the discussion on the effectiveness of monetary policy has led to more detailed research on whether price monetary policy or quantitative monetary policy is more effective.

In view of this, this paper analyzes the effectiveness of the price-based monetary policy in the face of the impact of the pandemic by taking the monthly data during the pandemic as a sample. The empirical findings of this paper are as follows: during the epidemic period, price-based monetary policy is effective in many aspects of economic regulation; To a certain extent, it can iron out macroeconomic fluctuations and promote the stable development of economy. This paper also studies the effect of price-based monetary policy on financial stability by constructing the financial stability composite index. Research

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has found that in the face of a shock as large as the COVID-19 pandemic, lowering benchmark interest rates can help financial stability. This means that the interest rate policy support of the central bank plays a crucial role in the stable development of the economy.

In addition, the empirical results of this paper show that quantitative monetary policy cannot be ignored. The positive and negative regression coefficients of quantitative monetary policy instrument variable QUI are consistent with those of price monetary policy instrument variable PRI, and the level of significance is also consistent. This shows that the quantitative monetary policy implemented during the COVID-19 pandemic is also effective. Moreover, the regression coefficient of quantitative monetary policy instrument variable QUI is larger, that is, the change of a unit of QUI has a greater impact on policy objectives, which also verifies the research results of Zhang et al.: in economic depression, quantitative monetary policy may play a greater role [3].

5.2. Policy recommendations

5.2.1. Lower the Benchmark Interest Rate

The difficulty and expensive financing of small and medium-sized enterprises have been an important problem which has plagued our economic development. When the economy is depressed or facing major shocks, the phenomenon of "loan reluctance" and "loan fear" of commercial banks will become more common, which further increases the financing difficulty of micro, small and medium-sized enterprises. At this time, the central bank needs to provide policy guidance to reduce the financing cost of enterprises and help micro, small and medium-sized enterprises tide over the difficulties. This will not only maintain the stability of the economic system, but also reduce the unemployment caused by the impact of the pandemic and maintain sustained economic growth.

5.2.2. Combination of Price-Based Monetary Policy and Quantitative Monetary Policy

Although the macro-economic environment is facing periodic and structural changes, the development direction of the monetary policy regulation framework is a transformation from quantitative monetary policy regulation framework to price monetary policy regulation framework. But money supply regulation is still effective in our country. In particular, when the development of money market is not perfect, the liberalization of interest rates is not complete and the indirect regulation tools are not complete in our country, quantitative monetary policy regulation still plays an important role in the stable development of our economy.

References

[1] Li B. The Impact of Macroeconomic Fluctuations on Housing Price Trends——Empirical Evidences from 31 Provinces and Cities in China[J]. Southwest Finance, 2019.
[2] Y. Han, S.F. Liu. Interest rate liberalization and the change of China's monetary policy pattern, World Economy Studies, vol. 2 (2017), 12-24.
[3] L. Zhang, H. Yin and Q. Wang. Quantity type or price type—Empirical evidence from the "non-linear" effectiveness of monetary policy, China Industrial Economics, Vol. 7 (2020), 61-79.
[4] Z.C. Bian, H.Q. Hu. Monetary policy tools of China: quantity or price rules? —Analysis based on DSGE model, Studies of International Finance, vol. 6 (2015), 12-20.
[5] Y. Zhang. China's monetary policy instruments regime in a new normal—From the perspective of the analysis of DSGE model with labor market friction, East China Economic Management, vol. 7(2017), 42-50.
[6] Gali. J: Monetary Policy, Inflation, and the Business Cycle—An Introduction to the New Keynesian Framework (Princeton University Press, New Jersey 2008).
[7] F. Cai, D.D. Zhang and Y.X. Liu. The impact of COVID-19 on the Chinese labor market—A comprehensive analysis based on the individual tracking survey, Economic Research Journal, Vol. 2 (2021), 4-21.
[8] X.D. He, B. Chen and W.C. Du. Impact effect and mechanism of COVID-19 pandemic on consumer confidence—Based on the questionnaire of residents in China's 35 large cities, Research on Economics and Management, Vol. 1 (2021), 40-50.
[9] Z.Y. Xiao, W. Chen. Monetary policy, interest rate transmission and the financing cost of small and medium enterprises: an empirical analysis based on actual financing costs, Economic Review, vol. 5 (2017), 79-90.
[10] C.L. Chen, Y.T. Lin. A Research on Fiscal Policy Response Function and Macro-Control Policy

ISSN 2616-5902 Vol. 4, Issue 19: 82-92, DOI: 10.25236/AJBM.2022.041911

Orientation, The Journal of World Economy, vol. 2 (2019), 47-71.
[11] Q.W. Guo, J.X. Jia. The explanation of China's economic fluctuation: investment shock and total factor productivity shock, Journal of Management World, vol. 7 (2004), 22-28.
[12] J.P. Dai, D.P. Liu. The dynamic relationship between financial stability, price stability and economic growth, Finance & Economics, vol. 10 (2015), 14-25.