



CENTRAL ASIAN JOURNAL OF THEORETICAL AND APPLIED SCIENCES

Volume: 03 Issue: 09 | Sep 2022 ISSN: 2660-5317
<https://cajotas.centralasianstudies.org>

Ways to Ensure a Low and Stable Level of Money Supply Growth

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Received 17th Jul 2022, Accepted 18th Aug 2022, Online 20th Sep 2022

Abstract: *Ensuring a low and stable growth rate of the money supply is a prerequisite for curbing inflation and stimulating economic activity. Therefore, in many countries of the world, control over the growth rate of the money supply is one of the main indicators of monetary policy.*

In turn, ensuring a low and stable growth rate of the money supply requires improving the mechanism for regulating the money supply.

The article scientifically substantiates the possibility of ensuring a low and stable growth rate of the money supply in the Republic of Uzbekistan.

Keywords: *money supply, money supply, Central Bank, monetary policy, inflation, credit, interest rate, required reserve, repo operation.*

Introduction

In the development strategy of New Uzbekistan for 2022-2026, ensuring that the annual level of inflation does not exceed 5 percent from 2023 is recognized as one of the priorities of the state macroeconomic policy [1]. This creates the need to correctly assess the impact of inflationary monetary factors and non-monetary factors on inflationary processes and to ensure a low and stable level of growth of the money supply.

At the same time, the fact that our republic has a large deficit in the foreign trade balance and the state budget, and the high probability of an increase in the prices of food products creates a negative impact on the stability of the growth rates of the money supply.

Review of literature on the subject.

In the economic literature, the need to maintain the growth rate of the money supply at a low and stable level was scientifically substantiated by Professor M. Friedman of the University of Chicago. According to M.Fridman's conclusion, the annual growth of the money supply at the level of 3-5 percent increases the economic activity in the economy. If the growth of the money supply is higher than 3-5 percent per year, then inflation begins to grow, if the growth of the money supply in the economy is less than 3-5 percent, the growth rate of the gross national product begins to decrease [2].

According to F. Mishkin's conclusion, open market and discount operations of the Central Bank play an important role in regulating money supply, and open market operations are characterized by the following advantages:

- implementation of open market operations at the initiative of the Central Bank and full control of its volume by the Central Bank;
- having a clear amount and flexibility of open market operations;
- that operations on the open market have the content of easy reversibility [3].

According to J. Taylor's conclusion, the Central Bank has the ability to change nominal interest rates as a response to changes in the inflation rate and fluctuations in the real growth rate of production, that is, the Central Bank has the ability to minimize cyclical fluctuations in the economy [4].

However, according to some economists, Taylor's conclusion is controversial, GEP indicators of inflation and GDP may not fully reflect important monetary indicators (monetary aggregates, credit multiplier, exchange rate, budget deficit) [5].

According to the conclusion of R. Miller and D. Van-Huz, the use of the monetary aggregate M1 as an indicator of monetary policy by the US Central Bank in the 90s of the 20th century is explained by the increase in the amount of cash in circulation: "In the USA, the importance of cash as money and as a component of the monetary aggregate M1 has increased. For example, in 1973, cash per person in the US was \$325, but by 1993, this indicator had reached \$1,050. The share of cash in the monetary aggregate M1 increased from 20.5 percent at the end of 1960 to over 30 percent at the end of 1992" [6].

T. Bobakulov comes to the conclusion that the monetary aggregate M2 should be chosen as an indicator of monetary policy by the Central Bank of the Republic of Uzbekistan, and this conclusion is based on the following evidence:

- availability of legal grounds for using the money supply growth indicator as an indicator of monetary policy;
- existence of a direct relationship between cash circulation and economic activity in our republic;
- The fact that the Central Bank has the ability to directly influence the mass of money in circulation through the monetary base;
- that the weight of non-monetary factors is the leading factor in the composition of inflation-forming factors, that the base inflation indicator is not used in the process of inflation targeting [7].

According to U. Abdullaev's conclusion, M. Fridman's proposal to implement a restrictive monetary policy aimed at curbing the money in circulation is not appropriate to be used in the conditions of modernization of the economy of the Republic of Uzbekistan due to the presence of factors such as the low level of the actual monetization coefficient in our republic, the low level of credit issuance by commercial banks in our republic explained [8].

Analyzes and results

According to Article 28 of the Law on the Central Bank of the Republic of Uzbekistan, the Central Bank may set one or more targets for changes in monetary and credit indicators based on inflation targets [9].

Also, in the main directions of the Monetary Policy for the period of 2022 and 2023-2024, it is planned to transfer the main monetary and credit operations from auctions to fixed rate full allotment operations, in which instead of the current deposit auctions, the term will be carried out in an unlimited amount. It was concluded that the transition to deposit operations up to 14 days will reduce the volatility of interest rates

in the money market compared to the base rate, increase the effect of the base rate and the efficiency of the transmission mechanism [10].

Currently, the Central Bank of the Republic controls the inflation target and the growth rate of the monetary aggregate M2.

Table 1. The state of macroeconomic monetary indicators in the Republic of Uzbekistan [11]

in percent

	2018	2019	2020	2021
Annual growth rate of monetary aggregate M2	13,3	13,8	17,8	30,3
Annual rate of inflation	14,3	15,1	11,1	10,0
The annual level of the central bank refinancing rate	16,0	16,0	14,0	14,0
Average annual interest rate of commercial banks' loans in national currency	20,5	24,2	22,3	20,8

From the data of Table 1, it can be seen that the annual growth rate of the money supply in the Republic of Uzbekistan in 2018-2021 was relatively high. This indicates the existence of problems in improving the mechanism of regulation of money supply. Especially in 2021, the growth rate of the money supply was very high.

From the data of Table 1, it can be seen that in 2020 and 2021, the decrease in the annual level of inflation allowed the Central Bank to reduce the refinancing rate. However, the average annual interest rate of commercial banks' loans in national currency remained high.

High interest rates of commercial bank loans do not allow economic entities to increase their use of commercial bank loans. As a result, there is a negative impact on the stability of macroeconomic growth rates.

The central bank also cannot lower the refinancing rate in high inflation conditions.

In the study of the regulation of money supply in the Republic of Uzbekistan, macro factors were selected:

Annual growth rate of monetary aggregate M2, % - Y_1 (freely linked);

Loans of commercial banks, trillion. sum- X_1 (involuntary binder);

Inflation rate, % - X_2 (involuntary binder);

The annual level of the refinancing rate of the Central Bank, % - X_3 (involuntarily bound);

Mandatory reserve rate set by the Central Bank for deposits of commercial banks in national currency, % - X_4 (involuntarily bound);

Average annual interest rate of commercial banks' loans in national currency, % - X_5 (involuntarily bound).

We can see descriptive statistics of the factors influencing the regulation of money supply in the Republic of Uzbekistan from the tables.

Table 2. Illustrative statistics of factors influencing the regulation of money supply in the Republic of Uzbekistan¹

Contains data				
obs:	10			
vars:	7			
size:	90			
variable name	storage type	display format	value label	variable label
var1	int	%8.0g		
y	byte	%8.0g		Y
x1	int	%8.0g		X1
x2	byte	%8.0g		X2
x3	byte	%8.0g		X3
x4	byte	%8.0g		X4
x5	byte	%8.0g		X5

By checking the Skewness/Kurtosis tests of X_1 , X_2 , X_3 , X_5 obtained for econometric analysis, the above results were obtained. According to Appendix 1 above, the p-value of X_1 , X_2 , X_3 , X_4 , X_5 is mostly less than 0.05, and we can see that the obtained set obeys the normal distribution law.

Table 3. Correlation table of factors influencing regulation of money supply in the Republic of Uzbekistan²

	x1	x2	x3	x4	x5
x1	1.0000				
x2	0.6191	1.0000			
x3	0.6878	0.9200	1.0000		
x4	-0.9450	-0.5835	-0.6883	1.0000	
x5	0.8649	0.9001	0.9303	-0.8610	1.0000

From Table 3, we can see that the number of observations is quite small compared to the factors. Only the most important ones are left here.

Based on the selected factors, the level of their relationship with each other is determined by the correlation coefficient in the Stata 14 program. According to the data in the table, there is a strong connection between the resulting factor and the selected factors, the correlation between the factors is dense and the conditions $|r_{x_1, x_2}| < 0,8$ are fulfilled, it is determined that there is no multicollinearity between the factors, and the regression equation can be made.

¹ Calculated by the author using the Stata14 program based on the information of the State Statistics Committee of the Republic of Uzbekistan

² Calculated by the author using the Stata14 program based on the information of the State Statistics Committee of the Republic of Uzbekistan

It is appropriate to use the Stata 14 program, which is currently the most convenient for constructing the regression equation. In this case, it is necessary to check the reliability and adequacy of the determined regression equations on the basis of certain criteria.

In order to verify the results of the model, the F-test was conducted, the essence of the F-test is to test the hypothesis that the coefficient of simple determination is $R^2=0$. If it becomes zero, then Y cannot be explained by X.

We construct the null and one-sided alternative hypotheses as follows:

$$H_0: \rho^2=0$$

$$H_1: \rho^2>0$$

We find the critical value of F for the level of significance $\alpha=0.05$:

$$F_{cr}=F_{\alpha}(k-1; n-k) = F_{0,05}(5;5) = 68.76$$

Estimated value of sample F:

$$F_{stat} = \frac{SST/(k-1)}{SSE(n-k)} = 240,88$$

In this case: SST - total sum of squares; SSE is residual sum of squares. The decisive rule: because $F_{cr}=68.76 < F=240.88$, the hypothesis H_0 is rejected. Hence, since $F_{stat} > F_{cr}$, the hypothesis H_0 is rejected. So, it can be concluded that the regression equation explains the non-zero part of Y change.

Table 4. Regression table of factors influencing regulation of money supply in the Republic of Uzbekistan³

Source	SS	df	MS	Number of obs	=	10
Model	336.817704	5	67.3635407	F(5, 4)	=	0.55
Residual	487.682296	4	121.920574	Prob > F	=	0.7356
				R-squared	=	0.4085
				Adj R-squared	=	-0.3308
Total	824.5	9	91.6111111	Root MSE	=	11.042

y	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
x1	.1274353	.116599	1.09	0.336	-.1962955 .4511661
x2	-1.324247	4.624165	-0.29	0.789	-14.16299 11.51449
x3	2.557683	5.065564	0.50	0.640	-11.50658 16.62194
x4	4.230482	3.868402	1.09	0.336	-6.509924 14.97089
x5	-.1954264	7.030826	-0.03	0.979	-19.71613 19.32528
_cons	-49.45199	87.41865	-0.57	0.602	-292.1651 193.2611

The purpose of performing a t-test on a model is to verify that the coefficients of the estimated linear regression equation of the population are significantly different from zero, that is, they are not random. Appropriate null and one-sided hypotheses can be constructed as follows:

$$H_0: \beta_1=0$$

$$H_1: \beta_1 \neq 0$$

The required p-value in the t-test for all coefficients is greater than 0.05, so none of the factors are statistically significant. Using the decisive rule, the hypothesis H_0 is accepted because the p-value is

>0.005. Hence, the population regression coefficient is significantly different from zero and is not random.

Coefficient of determination (definition, formula and comment on them). Conclusions on the issue. The coefficient of determination in multivariable regression – R² quantity indicates the part of the variable Y that can be explained by the regression equation found by the predictor variables.

It is calculated based on the following:

$$R^2 = 1 - \frac{SSE}{SST} = 1 - \frac{\sum (Y - \hat{Y})^2}{\sum (Y - \bar{Y})^2} = 0,864$$

In this,

SST - total sum of squares,

SSE is residual sum of squares.

In short, macro factors (annual growth rate of monetary aggregate M2), (loans of commercial banks, (inflation rate), (annual level of central bank refinancing rate), (annual rate of central bank commercial banks) selected in the study of money supply regulation in the Republic of Uzbekistan no statistical relationship was observed between the mandatory reserve ratio (the average annual interest rate of commercial banks' national currency loans).

Conclusions and suggestions

During the research, we formed the following conclusions:

According to the current legislation, the Central Bank of the country has been given the right to set one or more targets for changes in monetary and credit indicators, based on the target indicators of inflation.

The transfer of the main money-credit operations from auctions to fully covered fixed-rate operations is one of the urgent issues of the monetary policy in the medium-term period, where the goal is to reduce the volatility of interest rates in the money market compared to the main rate, increase the effect of the main rate and the efficiency of the transmission mechanism.

The relatively high annual growth rate of the money supply in 2018-2021 in our republic indicates the existence of problems in improving the mechanism of regulating the money supply.

In 2020 and 2021, the decrease in the annual rate of inflation allowed the Central Bank of the country to reduce the refinancing rate, but the average annual interest rate of commercial banks' loans in national currency remained high.

In our opinion, the following measures should be implemented to ensure a low and stable level of money supply growth in our republic:

1. Taking into account the fact that the weight of the M0 monetary aggregate in the composition of the M2 monetary aggregate is high and the weight of demand deposits in the total volume of commercial bank deposits is high, it is necessary to abandon the M2 monetary aggregate as an object of control and take the M1 monetary aggregate as an object of control.

As of January 1, 2022, the weight of the M0 monetary aggregate in the composition of the M2 monetary aggregate in the Republic of Uzbekistan was 30.2 percent, and the weight of demand deposits in the volume of gross deposits of commercial banks was 42.3 percent [12].

2. In order to strengthen the process of transformation of commercial banks' term and savings deposits into assets and to reduce the impact of demand deposits on the demand for foreign currency, first, it is necessary to exempt the national currency term and savings deposits of commercial banks from the mandatory reserve requirements; secondly, it is necessary to double the required reserve rates for demand deposits in national currency.

Currently, the lowest mandatory reserve rate (4%) has been established for deposits of commercial banks of our republic in national currency. The highest reserve rate (14%) is set for their foreign currency deposits. However, most of the impact on demand for foreign currencies comes from demand deposits.

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