Impact of Economic Regulation through Monetary Policy: Impact Analysis of Monetary Policy Tools on Economic Stability in Uzbekistan

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Abstract: Monetary policy is an integral part of economic development strategy in any economy due to its significant impact on economic sustainability. It has been an effective tool for regulating the economy through several tools. Nowadays the use of monetary policy tools to manage economic growth processes is a common practice in all market economies by balancing money supply and demand in domestic markets, increasing the benefits from foreign trade by exchange rate and overall financial flows by monitoring inflation rate trends. However, most effective tools are refinancing rate, mandatory reserve requirements and sterilization operations, which have direct linkages to financial flows, money supply, inflation, and exchange rate. In this paper, the author examined the impact of monetary policy tools on economic regulation in Uzbekistan by analyzing the relationship between monetary policy tools and economic growth. Empiric analysis revealed that monetary policy tools influenced positively on economic growth with a long-term relationship.

Keywords: Monetary policy, Economic regulation, Uzbekistan.

1. Introduction

As the economy has transitioned from recovery to expansion, the role of monetary policy has shifted to sustaining the expansion by gradually moving conventional and unconventional policy back to normal (Williams, 2017). In the last two decades global financial system experienced a great shift in the importance of monetary policy indeed. Large gaps in the financial system and even in the economic structure were bridged by using monetary policy instruments in order to normalize the overall situation in the economy. Series of hazards and risks to the economic stability promoted monetary policy from just a small element of the financial system to a normalizer of an entire economy. Even in a group of developed monetary policy has served as a key tool in balancing the economy. The most relevant case could be EU's monetary policy which regulations all economic relations via common instruments in Euro area. Or G7 and G20 countries regularly coordinate their monetary policy actions to keep sustainable growth and to avoid sudden external shocks in the economy.

Monetary policy decisions affect expectations for the future performance of the economy (Banco de Mexico, 2014). The latest adjustments in global financial architecture revealed that time of new theory of monetary policy and economy has already come. Monetary policy tools have become the key instruments of regulating the economy in nearly all of the modern economies by giving a less room for fiscal policy tool. Linkages between monetary policy and economic performance are explained by bilateral impact channels. In older literature, economic regulation was initiated by governments through fiscal policy tools. As global economic environment changes, fiscal policy tools have become a less effective solution due to its high dependence on

fiscal balance of the country. The new theory of government intervention in the economy demises the use of monetary policy tools to control economic processes through money demand and supply powers. The concept of an open economy is structured around liberalized, competitive and healthy economic system. An open economy has specific attributes, requirements and integral elements related to monetary policy such as liquidity, floating exchange rate, inflation targeting, money supply etc. Therefore, if prudently steered, monetary policy regulates the economy with its structural aggregates.

Modern economic theory prioritizes the optimally structured monetary policy with appropriate regulatory tools. This theory prioritizes the expansionary monetary system, which is the base to support economic growth and to minimize threats to economic condition. Therefore, after global financial crisis developed economies took actions against the further deepening of downturn using monetary policy tools. Rebalancing money supply facilitated to keep market order and capital flows. However, developing economies are accustomed to exploiting monetary policy tools to control inflation and price stability only. They are still limited to follow classical theory applications in running monetary policy. The most widespread monetary policy tool is interest rate floors, ceilings and reserve requirements installed by monetary policy authority to regulate economy through banking system channels which have direct link with money supply and demand. These tools have been effectively used by both developed and developing economies when they are in the threshold of financial imbalance or large economic reforms. Some economies frequently set effective interest rate floors, ceilings, and mandatory reserve requirements to support economic growth in normal conditions. Uzbekistan is one of the abovementioned economies, which regulates economy with impact channels of monetary policy tools. In order to improve the business climate and overall economic condition Uzbekistan timely changed interest rate floor and did not use any ceilings for lending. This paper presents a glimpse of a large-scale research on the use of monetary policy tools in economic regulation.

2. Literature Review

Monetary policy and the economy is a hotly discussed and widely studied area of research. In spite of changes in economic theory and fundamental concepts, the position of monetary policy is strengthening and its tools are going deeper to the economic ground. Therefore, it opens rooms for further research and policymaking. One of the fundamental theories regarding regulating the economy is monetary policy impact on economic regulation through inflation and output channels. In 2017, Mathai examined the role of monetary policy in stabilizing the economy by means of the money supply through regulating the inflation and output in the economy. Mathai supported the ECB and Fed's approach of using monetary policy to regulate inflation and economic growth. Shirai (2017) studied the appropriateness of Japan's new monetary policy tool named quantitative and qualitative monetary easing announced in 2013. She explored Japan's recent practices and performance and identified four structural factors that contributed to the limited impact of unconventional monetary easing on the economy via aggregate demand and inflation channels. She found that Japanese monetary policy authority should do more objective projections for the timing of achieving its price stability target to keep economic stability. In 2015, Aizenman, Chinn, and Ito investigated the effect of monetary policy changes in financial center countries on smaller economies. He found that an economy that pursues greater exchange rate stability and financial openness has a stronger link with the center economies.

3. Methodology

The methodology of this small-scale research was built on cointegration test. We selected three monetary policy tools which have a direct impact on economic regulation: refinancing rate, mandatory reserve rate and sterilization volume to GDP. As an effective tool of economic regulation, we selected GDP growth. We specified our model as follows:

$$LnGGDP = a\_0 + a\_1\ LnRR + a\_2\ LnMR + a\_3\ LnST + \mu\_t$$

Where, GGDP – GDP growth – indicator of the change in state of an economy in a particular period. It reflects the real condition (fall, stagnation, growth) in the economy.

RR – refinancing rate – interest rate floor for lending by banks and other non-bank financial institutions fixed by monetary authority (Central Bank in case of Uzbekistan)

MR – mandatory reserve rate – obligatory reserve requirements as a percentage of deposit or loan volume fixed by monetary authority (Central Bank in case of Uzbekistan)

ST – sterilization volume to GDP – volume of open market operations to GDP conducted by monetary policy authority to regulate money supply and demand.

4. Analysis and Results

At the initial stage of the analysis, we conduct unit root test to examine stationarity, T-statistic, F-statistic and R^2. We apply Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests in initial level first and second difference to analyze order of integration.

Table 1: Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) test results in level

Variable	PP	ADF
LnGGDP	-10.7712	-11.4224
LnRR	-0.9012	-0.0906
LnMR	-0.0729	-0.0098
LnST	-2.4029	-2.7873

PP and ADF tests in in level show that stationarity does not exist. So we test stationarity in first difference.

Table 2: Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) test results in the first difference

Variable	PP	ADF
LnGGDP	-12.3519	-10.4628
LnRR	-3.7607	-3.7607
LnMR	-3.0000	-3.0000
LnST	-2.6459	-2.6459

Table 2 shows that variables are stationary in first difference of I(1). After testing stationarity, we start testing cointegration to examine long-term relationship among selected variables in Johansen method.

Table 3: Unrestricted cointegration rank test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistics	0.05 Critical value	Prob. **
No*	0.77898	69.00976	48.56183	0.0001
At most 1	0.41225	27.09756	28.97714	0.1002
At most 2	0.31471	11.59778	15.27149	0.1699
At most 3	0.04752	1.41246	3.79646	0.2280

Trace test indicates no cointegration at the 0.05 level
*denotes rejection of the null hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Johansen cointegration test results showed that long-term relationship exists between variables. Eigenvalue statistics prove that null hypothesis is irrelevant and cointegration exists in 5 percent confidence interval.

According to Eagle-Granger theory, if the dependent variable (GDP growth) and independent variables (refinancing rate, mandatory reserve requirements and sterilization volume to GDP) are cointegrated, error correction mechanism has to be applied. For our model we used following ECM model:

$$\Delta y_t = \emptyset_{10} + \sum_{j=0}^{s} \emptyset_{11j} \Delta p_{t-j} + \sum_{i=0}^{q} \emptyset_{12i} \Delta y_{t-i} + \rho_1 \mu_{t-1} + e_{1t}$$

$$\Delta p_t = \emptyset_{20} + \sum_{j=0}^{s} \emptyset_{21j} \Delta y_{t-j} + \sum_{i=0}^{q} \emptyset_{22i} \Delta p_{t-i} + \rho_2 \eta_{t-1} + e_{2t}$$

Where, Δ – first difference operator, $\mu_{(t-1)}$, $\eta_{(t-1)}$ – error correction nomials, e_{1t}, e_{2t} – residuals.
Then we specified error correction model for our model:

$$\Delta LnGGDP = \alpha_0 + \alpha_1 \Delta LnRR + \alpha_2 \Delta LnMR + \alpha_3 \Delta LnST + \mu_{t-1}$$

Table 4: Error correction model (Dependent variable: GGDP)

Variable	Estimate	Standard error	t-statistic	Probability
C	0.1551	0.1167	1.4722	0.2317
$\Delta LnRR$	0.3162	0.2043	1.4431	0.2124
$\Delta LnMR$	0.0149	0.0986	0.0236	0.0315
$\Delta LnST$	0.0057	0.0434	0.0076	0.4255
U_{t-1}	0.5361	0.1935	3.2418	0.0018
R^2	0.4483	Mean dependent variable		0.09
F-statistic	4.6714	Durbin-Watson statistic		1.9885
Probability (F-statistic)	0.061			

Results reveal that in 2005-2016 monetary policy tools positively influenced on economic growth and were supportive in regulating the national economy. Refinancing rate was most effective among all three tools, while sterilization was least and mandatory reserve requirements were in mid position in terms of impact level. F-statistic showed that there was a long-term relationship between economic growth and monetary policy tools.

5. Conclusion

In this research, an author attempted to study the interconnectedness between monetary policy and economic stability using econometric analysis methods. Moreover, he studied a great deal of literature to trace the roots of linkages of monetary policy tools and economic growth in modern economic relation. He kept the essence of the study by analyzing the power of monetary policy in regulating the domestic economy in the exemplary of Uzbekistan. Analyses revealed that in the selected period monetary policy tools, e.g. refinancing rate, mandatory rate, and sterilization operations positively influenced on economic growth, which means monetary policy tools were effective in economic regulation. Moreover, monetary policy and economy possessed long-term relationship in the given period of time.

The key findings of the study enable to conclude that monetary policy tools played a significant role in regulating the economy towards growth. However, in 2005-2016 period inflation rate and exchange rate were key barriers to economic growth which were in "jurisdiction" of monetary policy. They amplified the external negative effect of monetary policy tools and often resulted in less efficiency. Therefore, the author proposes following research-led recommendations to further increase of positive effect of monetary policy in economic regulation:

1. Recently government put several forward steps to reform exchange rate policy and consequently it succeeded in the early transition process to floating rate. Further strengthening the position of exchange rate policy provides opportunities to increase foreign trade volume and expands the export capability of the economy.

2. Refinancing rate is seen as an effective tool for controlling the money supply in the economy. Change in refinancing rate leads to an absolute impact on financial flows. Therefore, permanent monitoring of money mass and financial flows and more regular change of refinancing rate help to balance money demand and supply in the economy.

3. Inflation targeting practices are considerably not weak in national practices. Introduction of modified inflation targeting and non-inflationary money supply management tools enable banks to offer cheaper lending and support business growth in the economy.

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