

The role of "extraordinary" monetary policy shocks

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Understanding the transmission of monetary policy into the real economy is important for making decisions on the key rate. Being in a situation where, for example, it is necessary to raise the key rate, the Central Bank naturally wants to understand to what extent other interest rates in the economy will change, what effect will be on inflation, and how soon these changes will occur.

In the modern economic literature, monetary shocks should be identified to assess the effect of monetary policy, that is, researchers are trying to find some exogenous variation in monetary policy. At the moment, the most modern way to identify monetary shocks is to use high-frequency data. In most articles on the USA and Europe, where high-frequency identification is used, the authors find a statistically significant effect between tightening monetary policy and slowing down inflation. However, the results are not so clear for developing countries. For example, in some studies on the transmission mechanism in Russia, a price puzzle was still found – tightening monetary policy leads to an increase in inflation. This result not only contradicts the economic theory but also makes us think about the (in)efficiency of the Central Bank's policy.

In this article, we propose a solution to this puzzle – we argue that this result is a consequence of high volatile inflation in the past and an unusually tight reaction (from a retrospective point of view) of monetary policy to changes in the main macroeconomic indicators during crisis periods. In other words, we show that a single monetary shock of unusually large size leads to a price puzzle. Specifically in the case of Russia – this is the shock of the end of 2014 when the Bank of Russia has adopted inflation targeting regime, immediately after it inflation started to grow at double-digit rates and the Board of Directors of the Bank of Russia decided to almost double the key rate (from 10.5% to 17%) – this event caused a shock of unprecedented proportions. In the paper, we emphasize that being in such a non-standard crisis, the identified shock could be correlated with a large number of other shocks – due to this, the results of the transmission mechanism in previous papers were not robust to the choice of the evaluation period.

To show the impact of this type of shock on the economy, we developed a DSGE model of the Russian economy estimated on monthly data. In the context of our research, it is very useful to use the DSGE model, which, to some extent, is very similar to the real economy, at the same time, amenable to our control and with clear channels and mechanisms of the spread of shocks within the economy. Within the framework of this model, we are conducting a series of experiments related to monetary shocks.

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In the first experiment, we simulate the economy and get a set of trajectories of the evolution of variables. Based on these simulated data, we evaluate a VAR model, in which the expected result is obtained – the tightening of monetary policy leads to a slowdown in inflation – that is, our model demonstrates the standard result for New Keynesian models. Next, we conduct a series of experiments in which we replace the shock value at one point in the generated data with a shock that exceeds the average by 4 times, and we get a price puzzle – in response to the tightening of monetary policy, inflation increases.

In the following experiments, we also use “real” (not from the simulated economy) monetary surprises identified using high-frequency data. The result has remained: if we consider the economy, including 2014-2015, then we again get a price puzzle, but by replacing the peak values of surprises with more “typical” values, the puzzle is resolved.

Also, as part of our analysis, we point out that another possible reason for obtaining statistically insignificant results in the previous studies on the transmission of monetary policy to inflation, even if the authors do not consider the period 2014-2015 (the peak of historical inflation), is a small sample size. Therefore, additionally in the work, we show, using simulated data, how many points are needed to get responses, that correspond to the theory.

Since the use of high-frequency surprises has become widespread in the modern literature, our article adds important results to the analysis of the transmission of monetary policy, especially for developing economies, which are characterized by higher volatility of the main macroeconomic indicators compared to developed economies. In our article, we call for careful use of volatile data on short samples, but at the same time, we show that a counterintuitive and/or statistically insignificant result is not necessarily evidence of the inefficiency of monetary policy, but, perhaps, features of the economy associated with a low proportion of monetary policy shocks compared to other shocks. Thus, our analysis is valuable not only for modern economic literature, but also for practical application in central banks.