Inflation is a quantitative measure of the rate at which the average price level of a basket of selected goods and services in an economy increases over a period of time. So that permanent shock in ε_t^{IS} causes GDP to deviate from its natural level, this leads to higher inflation. As a result, we are moving away from the desired level of inflation (target).

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MODELLING OF SIMPLIFIED INFLATION TARGETING SYSTEM

In 2015 year in Ukraine was implemented the inflation targeting policy of the National Bank of Ukraine (NBU). This policy is based on the two-side connection between the inflation level, measured as the Consumption Price Index (CPI), and the key policy rate. This connection works due to the monetary transmission mechanism, which acts through the finance, aggregate supply, and GDP gap channels from the rate to the inflation and through the expected inflation backwards. This model is simplified, so that only inflation, key policy rate and expected inflation are interconnected.

Expected inflation is the smoothed inflation, so that it comes with 1-month lag. Inflation gap is also put in this model as the connector between the inflation and the policy rate. It is considered as the difference between the expected inflation and the inflation target, set at 5 as it is in the Ukraine. Also, the model includes the neutral interest rate which is 1% when the inflation is at its target. The adjustment time of inflation changes is put 6 months because inflation slowly adjusts to the rate changes, whether the rate can change much faster, so its adjustment time is 1 month.

This model can show what would be if the NBU wanted to make its inflation target lower. This is modeled with the 1-basis point step of the target in the 6th month, so that the target is 4 after 6th month.

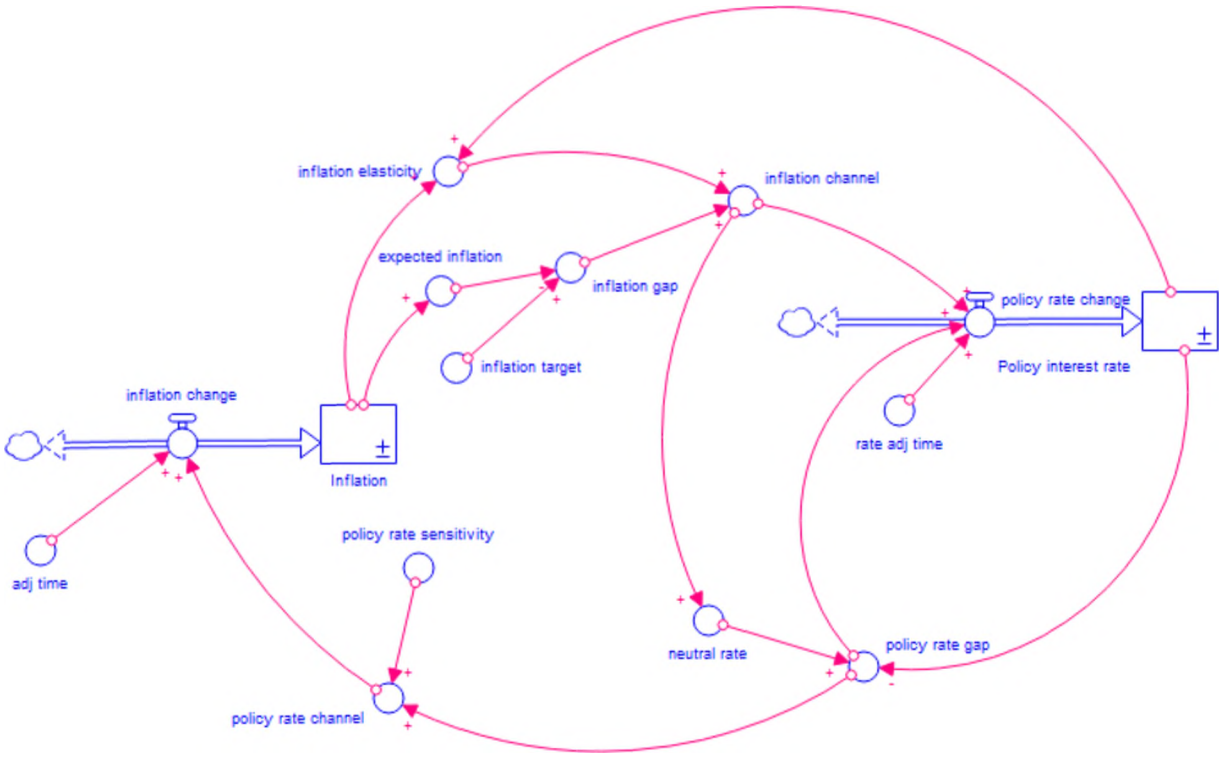

Figure 1. Simplified Inflation Targeting Model

At the beginning, all parameters are at their target levels, so that the inflation is 5, and the key policy rate is 1.

After the target decrease in the 6th month, both expected and real inflation are increasing a bit, because the reaction on the rate changes is lagged. After small increase, inflation begins to fall to its new target. Expected inflation falls more slowly, but to the end of the 3-year modeling period, it is almost near its target of 4.

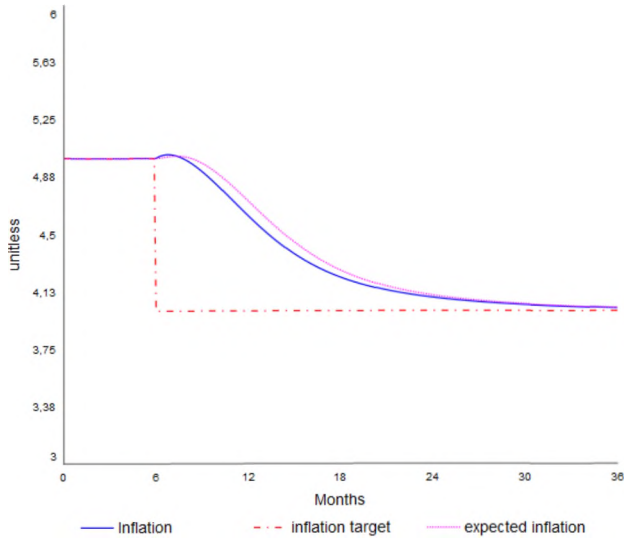

Figure 2. Inflation Behavior

Key policy rate rises very fast almost twice, and after 4 months begins to decrease. It means that inflation is falling to the target fast enough, and there is no more need to keep such high rate. Also, it is seen that because of the need to keep the inflation lower the rate doesn't return to its neutral rate of 1 very fast but remains a bit higher for a long time.

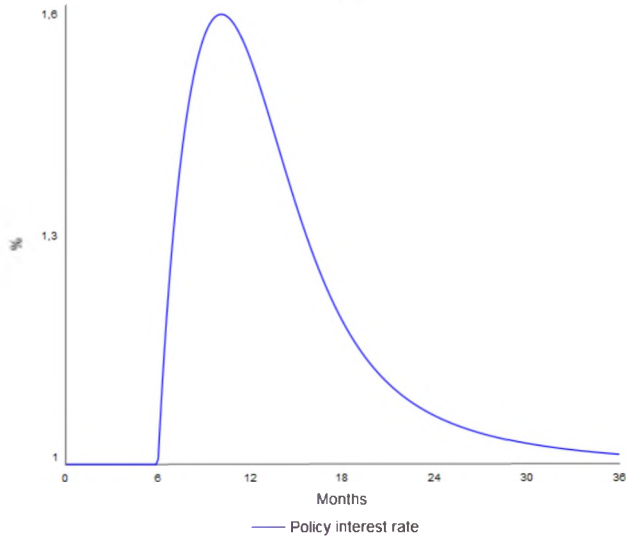

Figure 3. Key Policy Rate Behavior

This model is useful for illustrating in the simplified way how the National Bank should behave in case of increase of the difference between the inflation and its target. It is obvious that inflation targeting doesn't support changing the target, it should remain the same. Otherwise, the inflation expectations would rise, and higher policy rate should be implemented, which negatively influences the economy. But the model also shows that if the inflation gap increases due to some shocks, the key policy rate should be strongly increased and then slowly fall to its neutral level.

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