

# The Effect of Sanctions on Russian Economy after the Crimean Annexation



## Abstract

**Background:** In February 2014, most of western world started to impose intensive sanctions such as restrictions on provision of fundings to major banks and property freeze for specific individuals and entities on Russian authorities.

**Reason:** Plunge in oil price and targeted economic sanctions.

**Target:** Analyze the mutual effects of combinations of feasible fiscal and monetary policies on the interest rate, exchange rate, output and trade.

## Background

### Slumped oil price:

·In Russia, two thirds general exports and half of federal revenues are contributed by oil exports.

·Due to worldwide incremental production in oil, international crude oil price dropped from \$105 to \$53 in 6 months, leading to a fall in oil export and a current account deficit.

·The current account deficit reduces the attractiveness of the domestic currency to foreign currencies, causing the ruble to depreciate.

### Intensive economic sanctions:

·The Russian financial system and dominant companies are blocked from accessing funds from the US and EU.

· Foreign entities began selling rubles and hoarding U.S. dollars to eliminate maturing liabilities and maintain funding provision.

·The ruble in the currency market increased sharply and the exchange rate decreased.

### Rising Inflation:

·Russia imposed an embargo on food products from the U.S. and EU, resulting in a high domestic inflation.

## How did CBR respond?

·In Russia, two thirds general exports and approximately half of federal revenues are contributed by oil exports.

·Russia's central bank raises interest rates to defend against ruble's continued depreciation, which relationship in between could be illustrated by interest rate parity:

$$E = \frac{1+i}{1+i^*} \bar{E}^e \quad (\text{Assuming } i^* \text{ and } \bar{E}^e \text{ are constant}).$$

·As real interest rate ( $i$ ) increased, the exchange rate of Ruble ( $E$ ) also increased.

·The positive correlation can be observed from Figure 1&2 :

Policy Rate: Month End: Key Rate

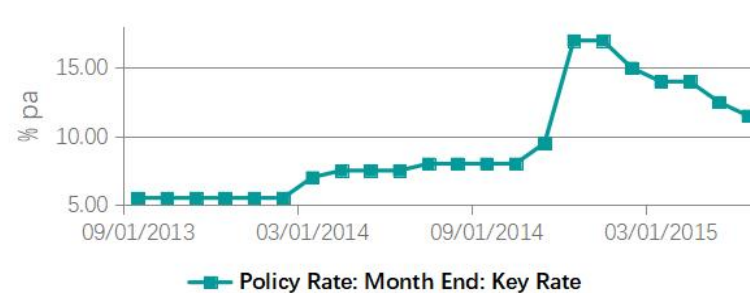


Figure 1

Foreign Exchange Rate: Bank of Russia: Avg per Month: US Dollar

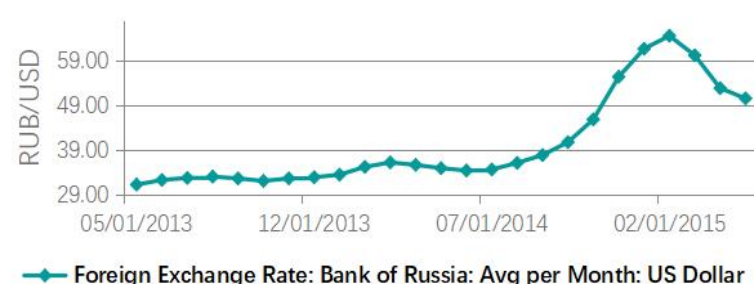


Figure 2

·Higher real interest rates also ease the high inflation (Figure 3).

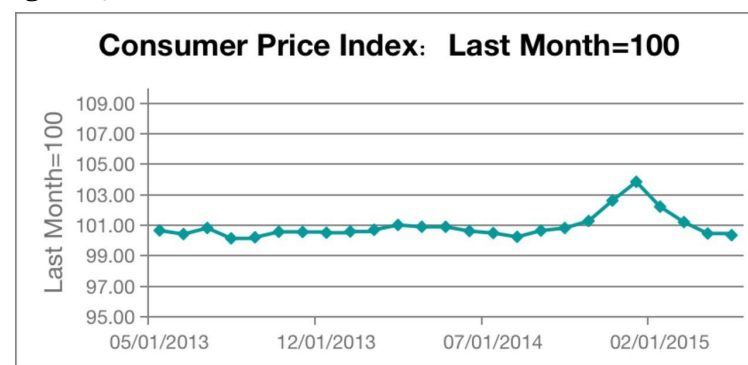


Figure 3

## Results

·The open-economy versions of the IS and LM relations are:

$$IS: Y = C(Y - T) + I(Y, i) + G - NX(Y, Y^*, \frac{1+i}{1+i^*} \bar{E}^e).$$

$$LM: i = \bar{i}^e$$

A higher interest rate leads to a decrease in investment and appreciation of the local currency, the latter which also results in decrease in net exports. The both effects drive to a decrease in demand for domestic goods and a decrease in output (Figure 4 & 5).

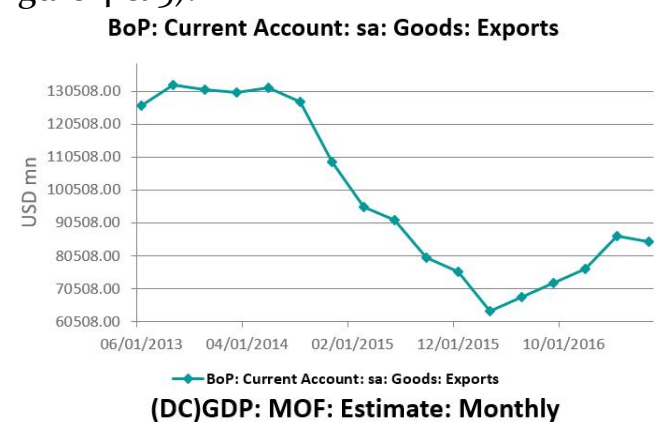


Figure 4 & 5

- The IS-LM-IP model can show aggregation of contraction in domestic demand, rising interest rates, and appreciation of the ruble by the movement from A to A'. When  $i$  increases, the IS curve shifts leftwards to  $IS'$ , the LM curve shifts upwards to  $LM'$  and  $E$  also moved to  $E'$  (Figure 6).

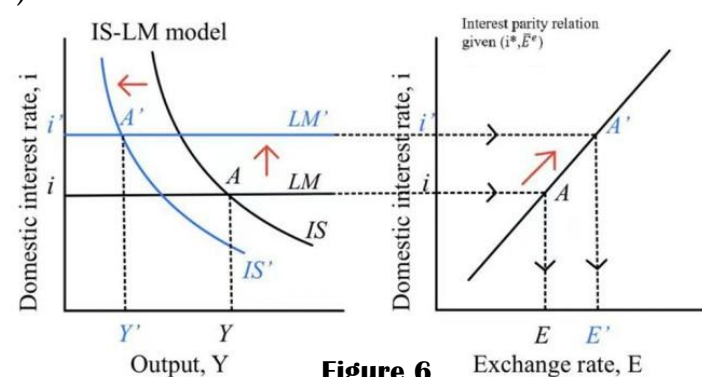


Figure 6

- As for the demand for domestic goods, the equation is expressed as:

$$Y = C(Y - T) + I(Y, i) + G - \frac{IM(Y, \epsilon)}{\epsilon} + X(Y^*, \epsilon).$$

After an increase in interest rate  $i$ , the ZZ curve shifts downward to  $ZZ'$  due to the discouraged demand ( $\Delta X$ ) result from the slump in investment and the export, and the net export curve also goes down by  $\Delta X$  from  $NX$  to  $NX'$ . The new equilibrium is at point A' with lower output level  $Y'$  and a trade deficit (Figure 7).

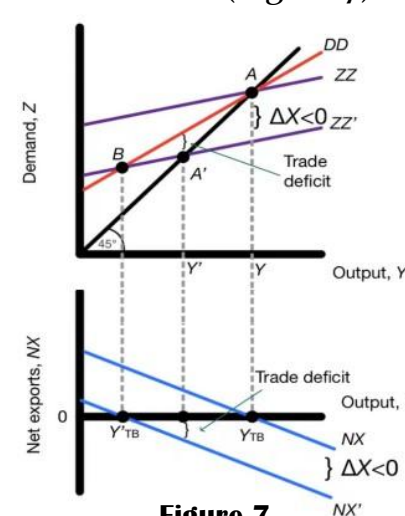


Figure 7

## What should CBR do?

·The output decreases sharply as higher interest rate led to: (1) lower investment (2) appreciation of the domestic currency, which in turn decreases exports.

·Then the government's objective is to increase output from  $Y$  to  $Y^*$ .

·Therefore, CBR decide to lower the interest rate from the beginning of 2015 to facilitate the recovery of the economy, as an expansionary monetary policy could theoretically stimulate aggregate demand and thus increases output. The reduction in interest rate can be observed in Figure 8.

·According to the interest rate parity condition:

$$E = \frac{1+i}{1+i^*} \bar{E}^e \quad (\text{Assuming } i^* \text{ and } \bar{E}^e \text{ are constant}).$$

As real interest rate ( $i$ ) decreases, the exchange rate of ruble ( $E$ ) also decreases.

## Has the government achieved its objectives?

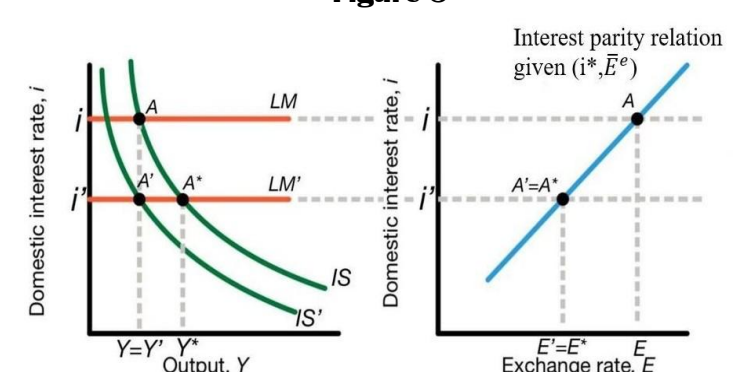
·The government lowers interest rates in attempt to move the equilibrium from the original point A to point A'.

·However, the exports will decrease due to the adverse effects of the sanctions→Lower domestic demand →IS curve will shift to the left.

·Thus, the output would only reach the level of  $Y'$ . The process can be represented by the IS- LM-IP model (Figure 8).

·The decrease in demand and interest rate indicates the left shift of IS curve and the down shift of LM curve, which explains why the equilibrium point changes from A to A'.

Figure 8



## Conclusion

·The four most vocal countries (Germany, Netherlands, Italy and Poland) about sanctions suffered a total €168 billion loss in business related with Russia since the crisis.

·Both Russia and EU suffered from huge losses.

·Eliminating sanctions is the most effective way to solve the problem.