



National Bank
of Ukraine

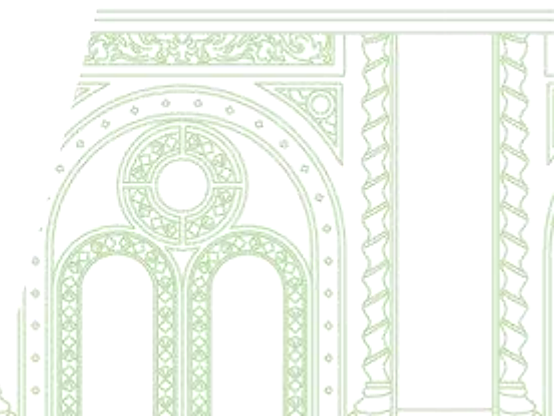
Neutral interest rate in Ukraine

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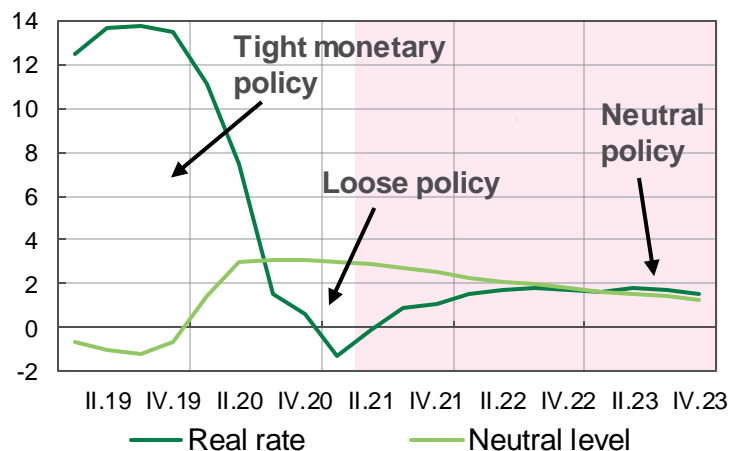
Monetary Policy and Economic Analysis
Department

NBU, May 2021



Neutral interest rate is used to gauge monetary policy stance

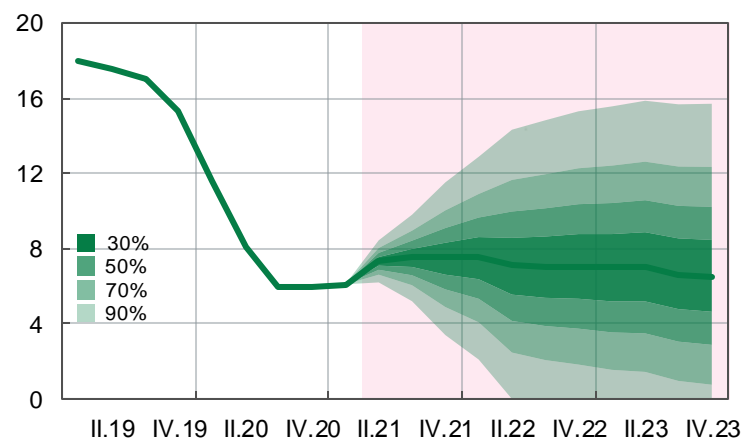
Real policy interest rate and its neutral level, %



Source: NBU staff estimates

Note: Deflated by inflation expectations that are based on the Quarterly Projection Model

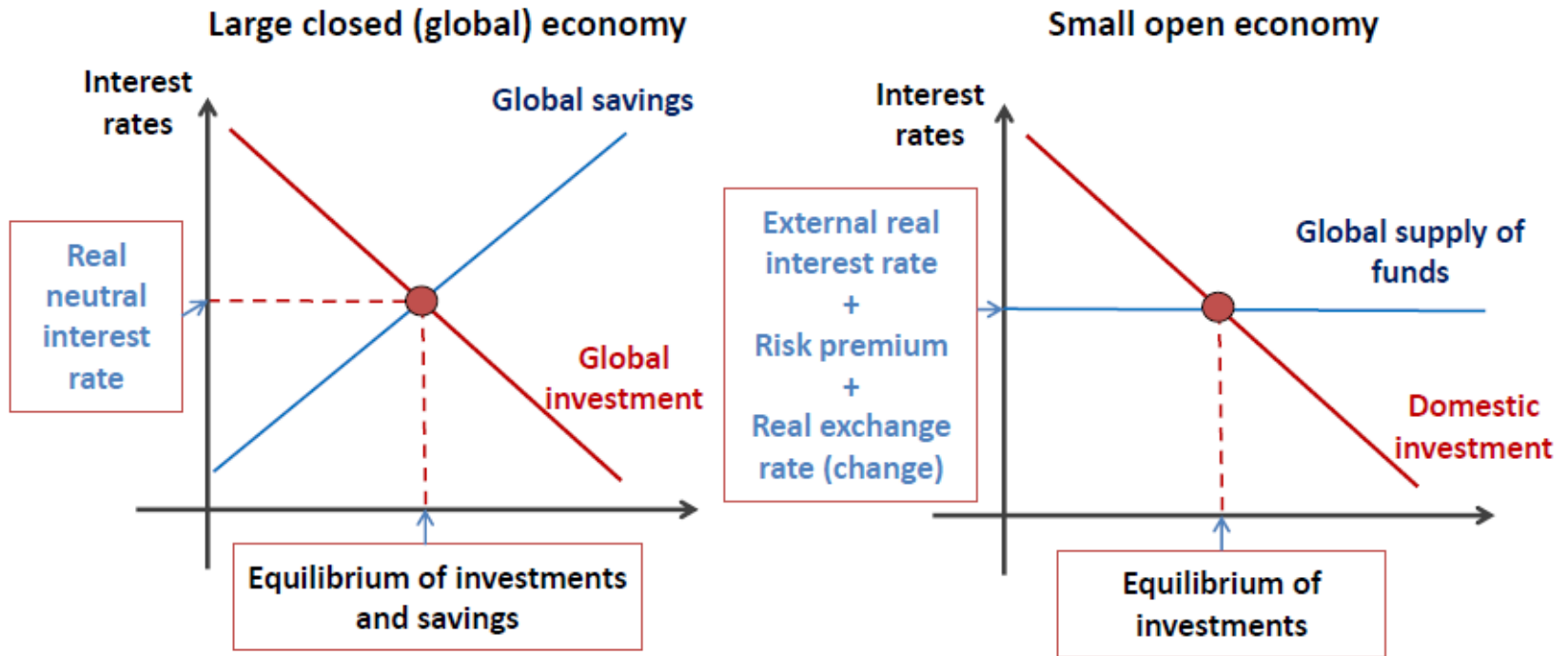
Nominal policy interest rate, quarterly average, %



Source: NBU staff estimates

- The neutral interest rate is unobserved and time-variant. Must be estimated, might be revised.
- Policy rate steers towards the neutral rate over the forecast horizon when the economy reaches its equilibrium, current economic shocks dissipate and inflation is on target.
- Projected nominal policy rate in IV.2023 (as of April 2021) is 6.5%, which equals approximately 1.5% real neutral rate + 5% inflation target.
- Updated estimates are regularly published in section 3.4 of the NBU's Inflation report.

Small open economy has an unlimited supply of funds at given interest rate from outside of the economy



- Small open economy can finance high consumption and investment through the inflow of foreign capital.
- Price of foreign capital depends on external financial conditions and internal factors such as the sovereign risk premium and the expected real exchange rate appreciation.

Neutral interest rate is derived from long-term uncovered interest rate parity (UIP)

Aggregate real return on capital in Ukraine

1. Regular flows (interest rate)
2. Changes in value of investment (exchange rate)



$$\text{Real Neutral IR (Ukraine)} + E(\overline{\Delta RER}) =$$

$$= \text{Real Neutral IR (US)} + \overline{\text{Risk premium}}$$



Real cost of capital in the US



Compensation for entering the market

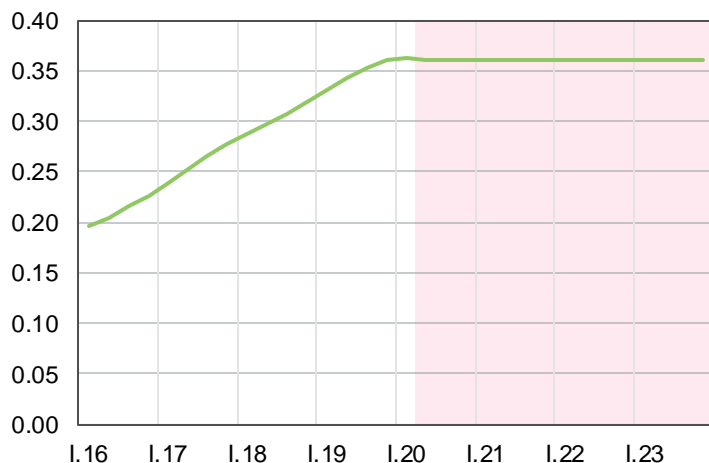
- The neutral interest rate in Ukraine changes along with the world's opportunity cost of capital – the US neutral rate.
- The rate depends on the state's investment attractiveness. It will increase/decrease according to changes in the sovereign risk premium (trend risk premium is used for estimation purposes).
- Stronger hryvnia boosts aggregate return by increasing the value of hryvnia assets. The neutral interest rate decreases with a faster appreciation of the real exchange rate (trend is used).
- Detailed working paper is available at [1], non-technical article is available at [2].

Neutral interest rate at the NBU is estimated using the Quarterly Projection Model

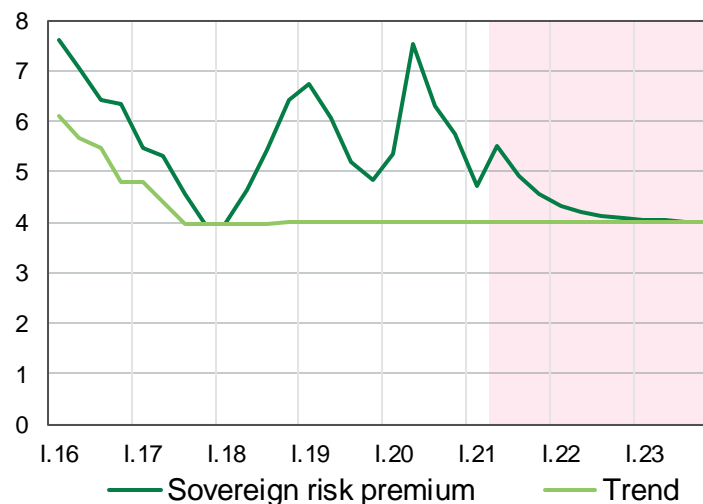
- New Keynesian model of a small open economy with specific extensions
- Semi-structural model in “gaps”
- The main equations are IS curve with specific extensions, expectations-augmented Phillips curve, UIP with smoothing interventions and commodity terms of trade, Taylor-type monetary policy rule
- Used as a core model at the NBU for regular macroeconomic forecasting and policy advice
- Estimations are conducted with Kalman filter
- Detailed working paper is available at **[3]**

Neutral rate in Ukraine changes along with its US counterpart and Ukrainian sovereign risk premium

Neutral rate in the US, %



Sovereign risk premium and its trend, p.p.



Source: FRB of New York, NBU staff calculations

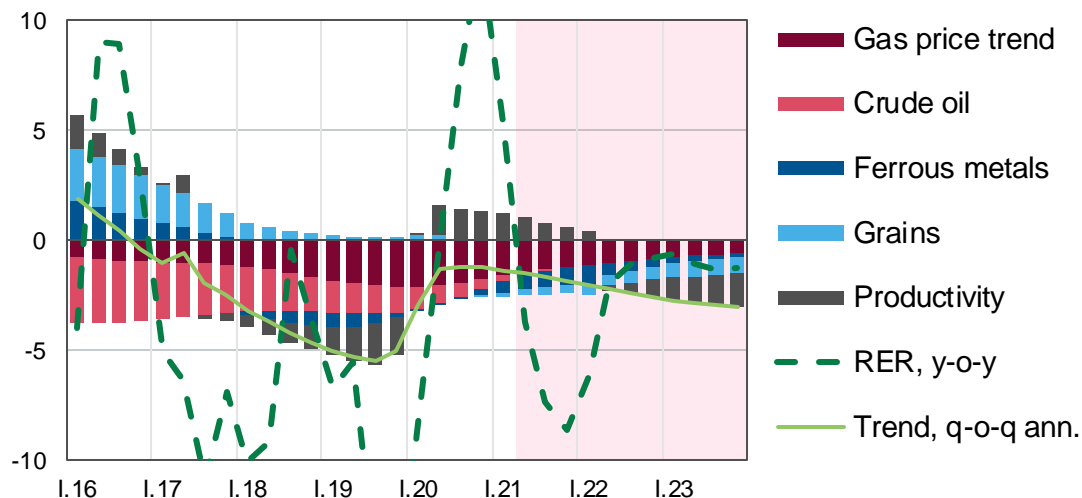
Note: 1) The FRB of New York does not publish the projected values of the neutral rate;
2) in November 2020, it suspended the publication of updated historical estimates

Source: Cbonds, NBU staff calculations

- We use the Laubach-Williams two-sided estimates by the Federal Reserve Bank of New York as the neutral rate in the US. It is recently low due to a global surplus of savings. Data is available at [\[4\]](#).
- The sovereign risk premium is calculated as the difference between the yields of Ukrainian Eurobonds in dollars and ten-year US Treasury bonds. Data is available at [\[5\]](#).
- The premium tends towards its trend, i.e. certain equilibrium. Recent deviations are considered temporary.

Faster real appreciation is consistent with lower neutral interest rate

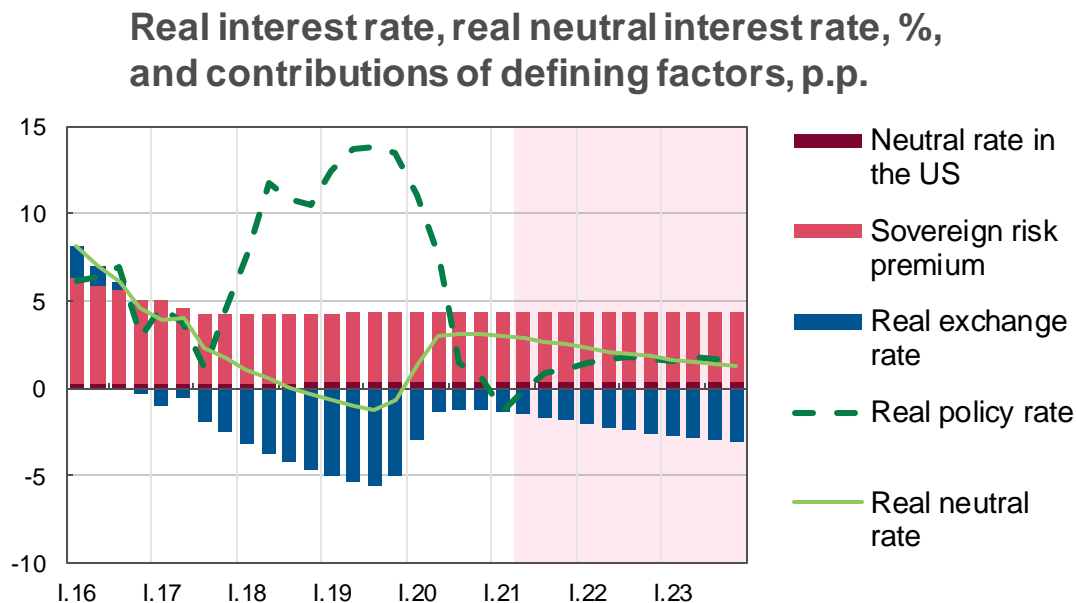
Real exchange rate, its trend, %, and contributions of defining factors, p.p. (↓ appreciation)



Source: NBU staff calculations

- The real exchange rate fluctuates around its trend (equilibrium) level, mainly tending toward it over the forecast horizon.
- Equilibrium RER appreciation depends on 1) the pace of productivity growth as Ukraine catches up with more developed economies, and 2) trends of prices on global commodity markets due to a large share of raw materials in Ukrainian foreign trade.
- Structural break in 2020 comes with suspended productivity growth amid the Coronavirus Crisis.

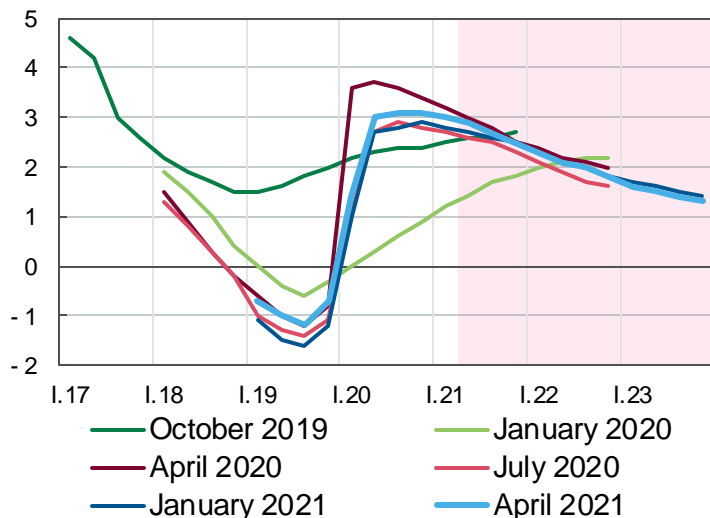
Neutral interest rate is being increased by relatively stable trend risk premium and decreased by relatively volatile trend real appreciation



- The neutral rate in Ukraine depends on its US counterpart. Forecast from April 2021 assumes consistently low rate in the US.
- Sovereign risk premium is the largest contributor. Its equilibrium is above the levels for other Eastern European countries, but can be decreased with reforms.
- Faster productivity growth increases the pace of real appreciation, which leads to lower neutral interest rate in a small open economy of Ukraine. This is in contrast with common methodologies for large closed economies, where higher productivity growth increases the neutral interest rate.

Neutral rate calculations are regularly revised as new data emerges

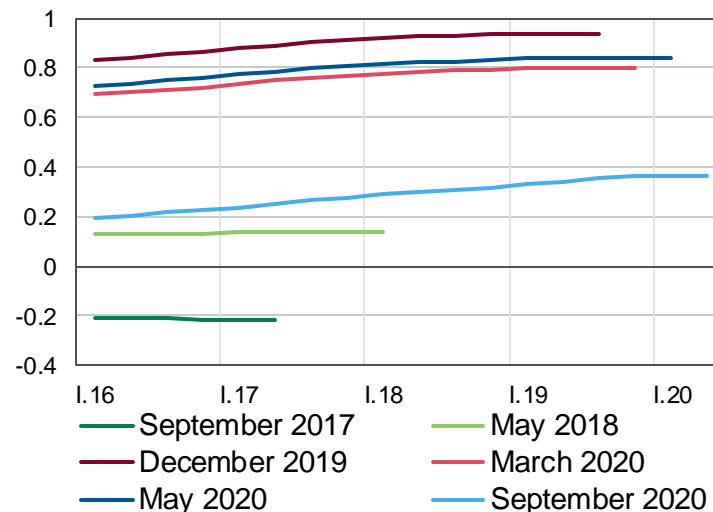
Neutral rate revisions in Ukraine



Source: NBU staff estimates

Note: The values for October 2020 (not shown) coincide with the values for July 2020

Neutral rate revisions in the US



Source: FRB of New York

- We significantly revised the rate in Ukraine twice in 2020. Lowered it in January. Optimistically increased the equilibrium real appreciation rate amid steady GDP and wages growth (productivity growth), influx of foreign capital and strengthening hryvnia in 2019.
- Increased it back in April. Added a structural break to equilibrium real appreciation with the onset of the Coronavirus Crisis and suspended productivity growth.
- The neutral rate in the US is also regularly updated, including the values for previous years.

References

1. Grui, A., Lepushynskyi, V., & Nikolaychuk, S. (2018). [A Neutral Real Interest Rate in the Case of a Small Open Economy: Application to Ukraine](#). *Visnyk of the National Bank of Ukraine*, (243 (1)), 4-20.
2. [Neutral price of money: the way the National Bank evaluates how tight its monetary policies are](#). *voxukraine.org*, February 1, 2021
3. Grui, A., & Vdovychenko, A. (2019). [Quarterly projection model for Ukraine](#). *NBU Working papers* (No. 03/2019).
4. <https://www.newyorkfed.org/research/policy/rstar>
5. <https://cbonds.com/indexes/Euro-Cbonds-Sovereign-Ukraine-YTM-eff/> and <https://cbonds.com/indexes/59/>