National Bank of Ukraine

Inflation report (January 2020)

Kyiv

11 February 2020

Monetary policy decision: summary

In January, the NBU Board decided to cut the key policy rate to 11.0%

- The NBU achieved its inflation target of 5% ± 1 pp (declared in 2015) earlier than expected
- The NBU continues to ease its monetary policy with the aim of maintaining inflation at the target and support economic growth

In light of the more rapid improvement in Ukraine's macroeconomic conditions, the NBU expects to cut the key policy rate to 7% by the end of 2020

Further cooperation with the IMF remains the main assumption underlying the macroeconomic forecast

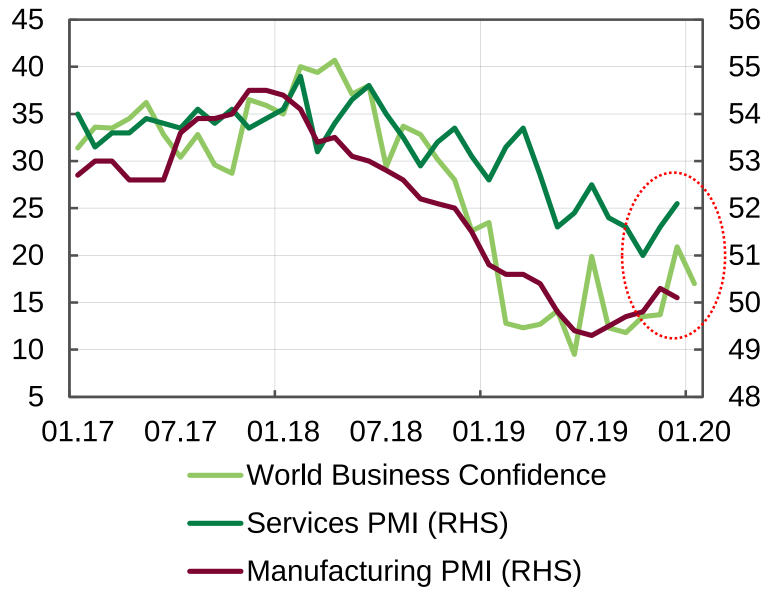
Key risks:

- a delay in entering into a new cooperation agreement with the IMF, and increased threats to macrofinancial stability pose the key risks
- the continued cooling of the global economy and a further deterioration in terms of trade
- an escalation of the military conflict and new trade restrictions introduced by Russia
- a drop in the harvest of grain, fruit and vegetable crops in the wake of unfavorable weather
- the higher volatility of global food prices, driven by global climate change
- a decrease in foreign capital inflows

If existing inflation risks materialize, the path of the key policy rate towards 7% may be longer. The key policy rate could be cut, to 7%, much more quickly. Conversely, faster implementation of reforms, coupled with significant investment inflows, could enable the NBU to cut the key policy rate at a quicker pace

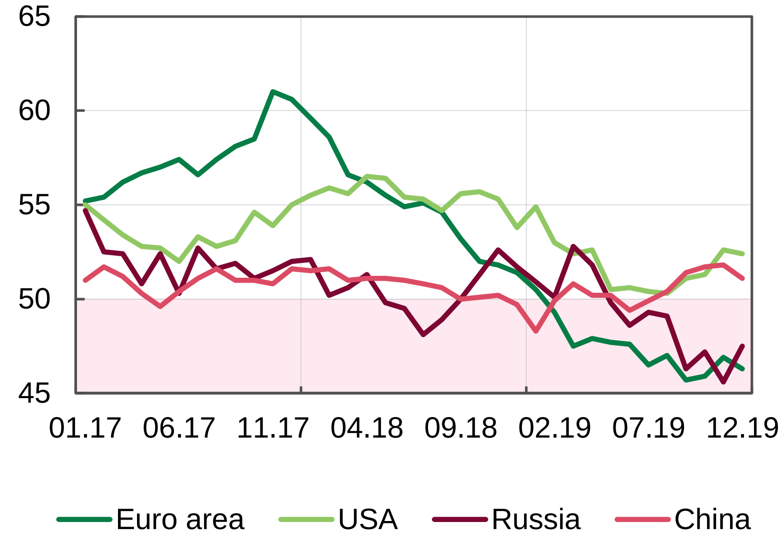
By the end of 2019 global economic activity and trade showed signs of stabilization

Global PMI and World Business Confidence



Source: IHS Markit, Moody’s.

Manufacturing PMI, Selected Economies

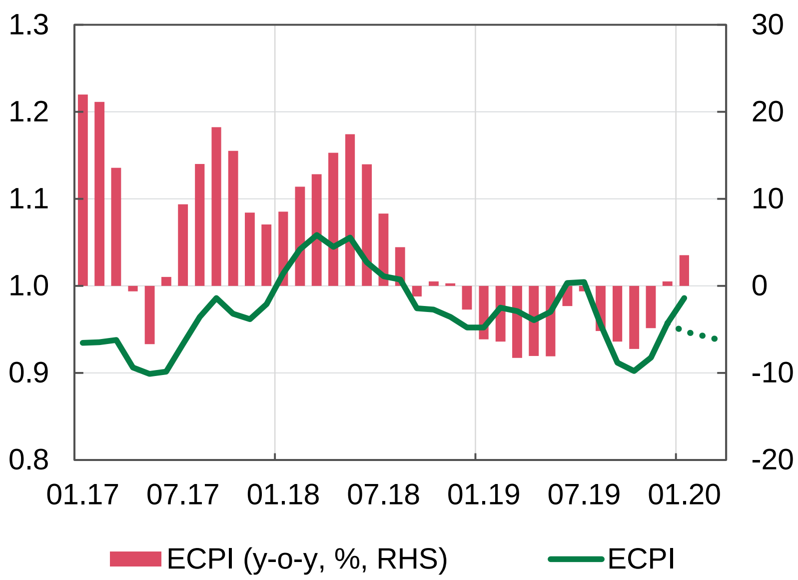


Source: IHS Markit.

- Intensification of trade negotiations and pending signing of trade agreement between US and China supported optimism
- However, overall performance remained subdued with the EA economy reporting the weakest growth due to slowdown in Germany, Austria, Italy and Spain
- Moreover, the deal between the US and China did not inspire much optimism for the EA and global trade performance

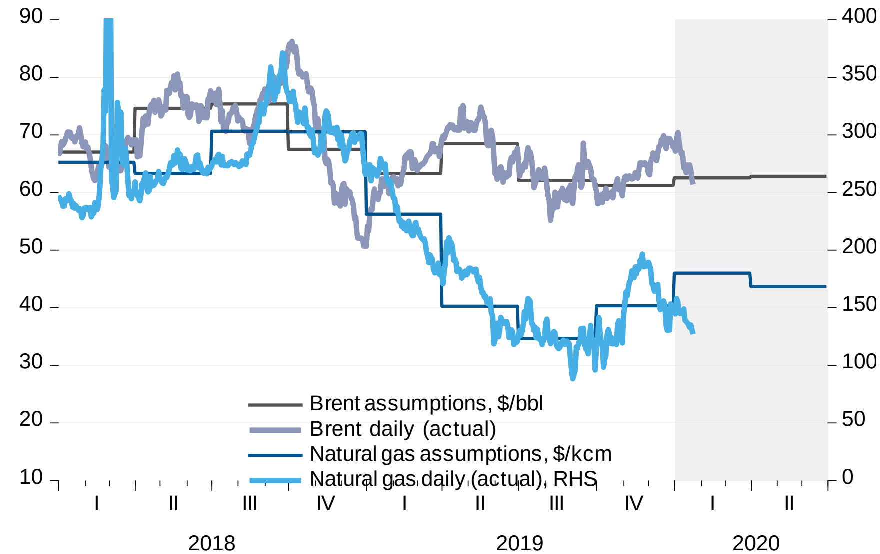
Modest price recovery for goods prevailing in Ukraine's exports and a decrease in energy prices suggest some ToT improvement

External Commodity Price Index (ECPI), Dec 2004=1



Source: NBU staff estimates, preliminary.

Brent and Natural Gas World Price

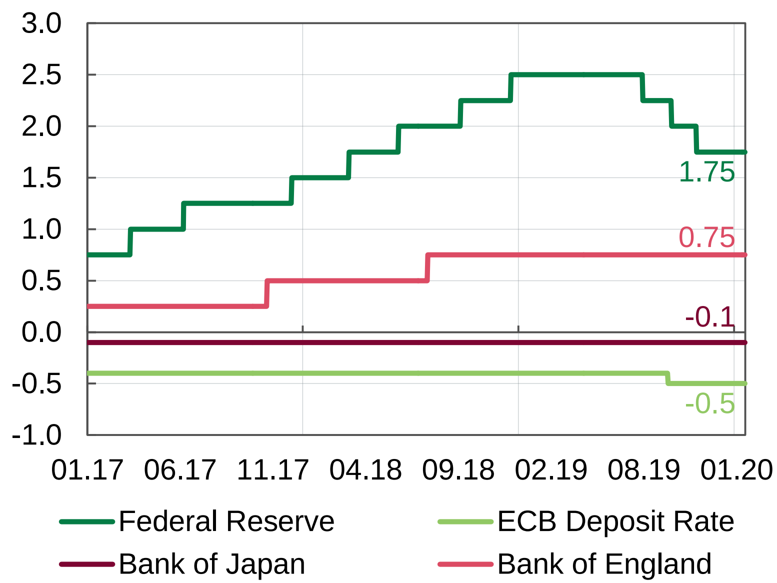


Source: Refinitiv Datastream, NBU staff estimates.

- Prices for goods prevailing in Ukraine's exports increased somewhat supported by positive market sentiments on news about the US-China trade deal, expectations global economic activity has already bottomed out, and weaker supply of selected goods (e.g. China's regional curbs on steel production, decrease in supply of iron ores from Australia, lower production of palm oil in Malaysia)
- Energy prices declined due to still weak demand, ample supply, subsided risk of further military tensions between Iran and the U.S., unrealized risk of Russia's gas transit termination through the Ukrainian territory and warm winter in the EU

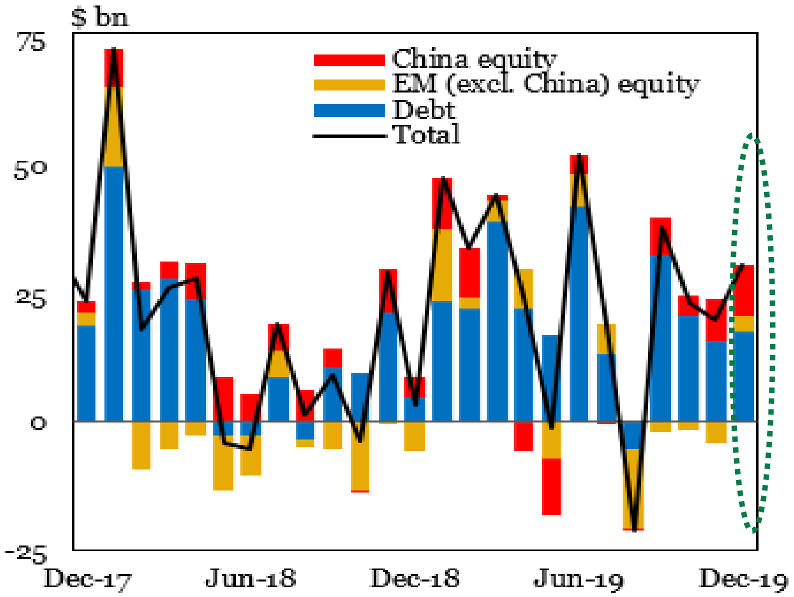
Loose financial market conditions support investors' appetite for EM assets

Key Policy Rates of Major Central Banks



Source: official web-pages of central banks.

Non-resident portfolio flows to EM

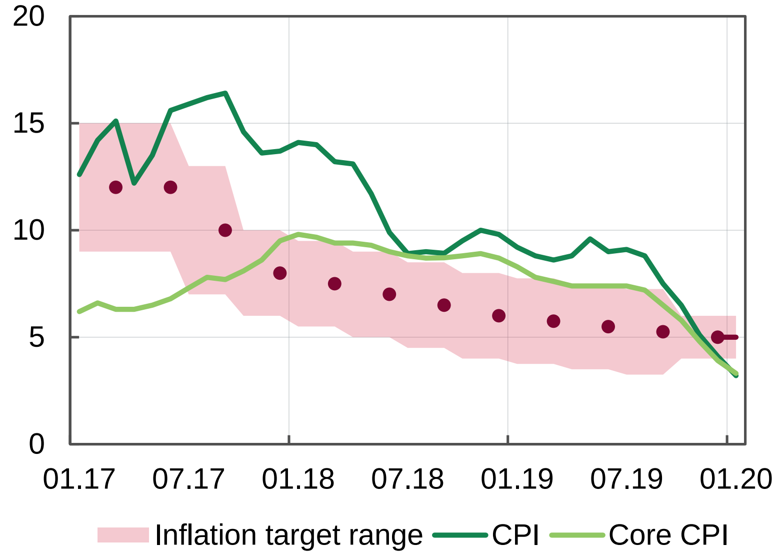


Source: Haver, IIF Twitter.

- Major central banks set the stage to justify keeping interest rates lower for longer:
  - the Fed is on hold since December unless some developments lead to "a material reassessment of the outlook"
  - The ECB keeps rates unchanged in January and launches a year-long strategic review
  - The Bank of England is leaning toward a cut (futures show about 60% probability in January)
- The risk premium for sovereign borrowers continued to decline. At the same time, EM sovereign bond yields remained attractive

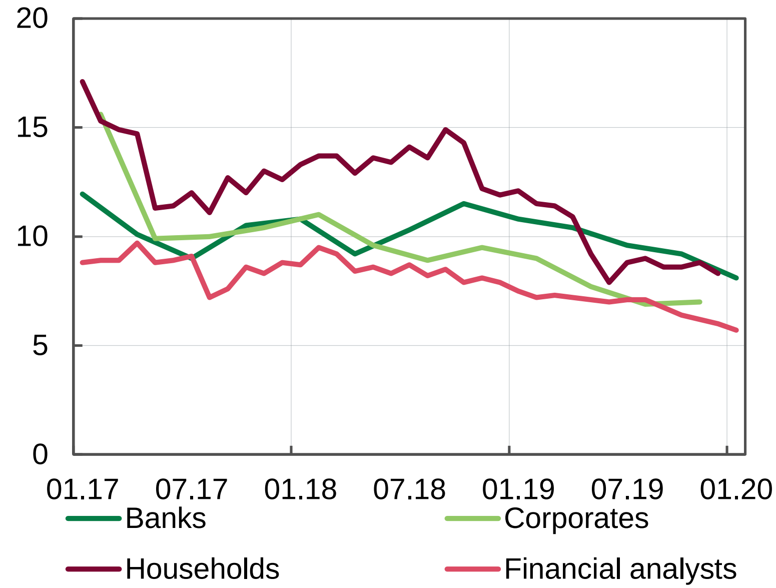
Consumer inflation slowed to 4.1% in 2019. Thus, the NBU achieved its medium-term inflation target of 5% ± 1 pp

Headline and Core Inflation, % yoy



Source: SSSU, NBU.

Inflation Expectations for the Next 12 Months, %

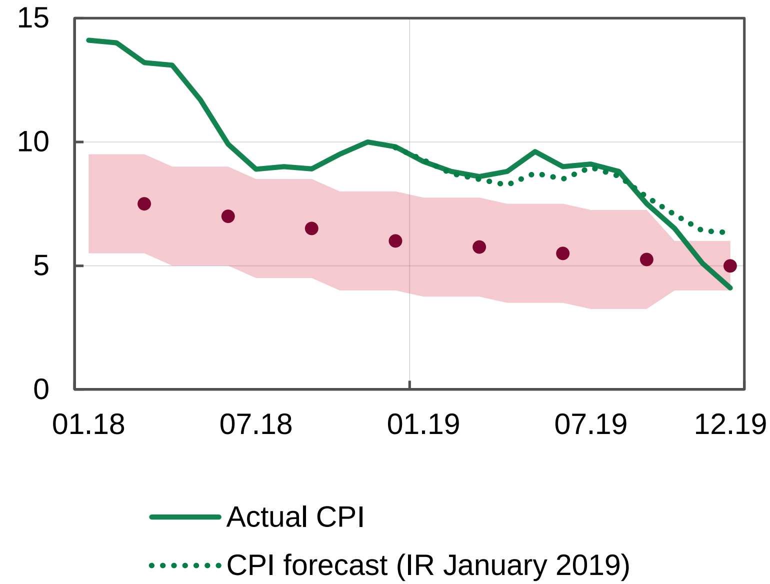


Source: NBU, GfK Ukraine surveys.

- The key contributor was the strengthening of the hryvnia exchange rate, which will continue to pass through on prices in the coming months
- Record grain and sunflower harvests, drop in the prices of the energy resources, and lower pressures from the supply of food were another factors
- The inflation expectations of households, financial analysts, businesses and banks gradually improved

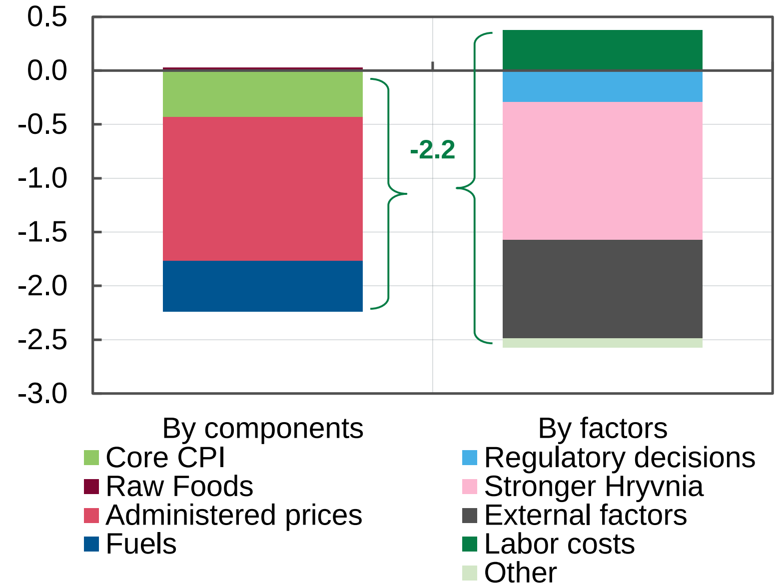
Box. Inflation in 2019 came below Jan-2019 IR forecast due to conservative assumptions and new fundamental drivers

Actual and Projected CPI, % yoy



Source: SSSU, NBU.

Annual CPI Inflation Forecast Error, pp

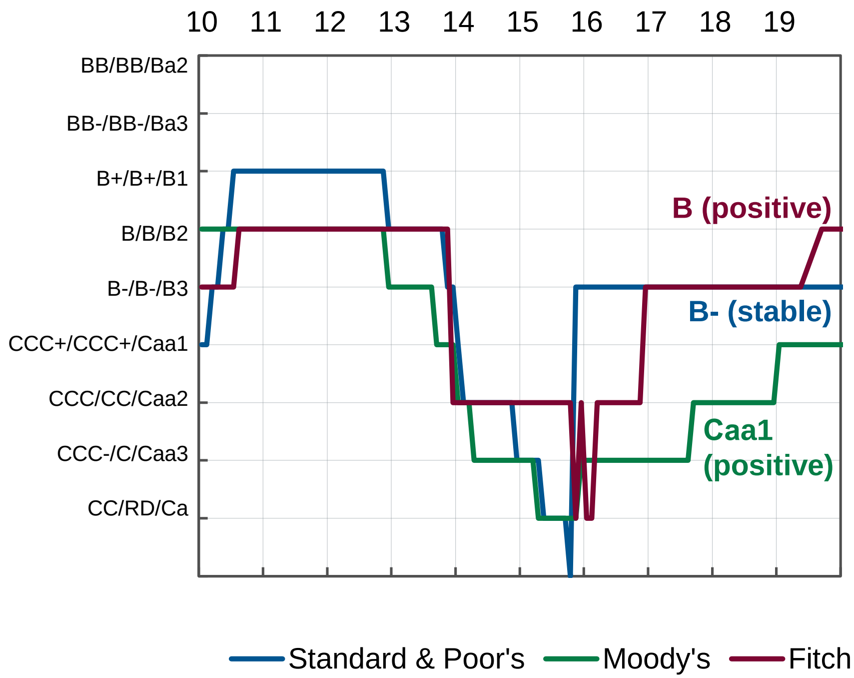


Source: SSSU, NBU.

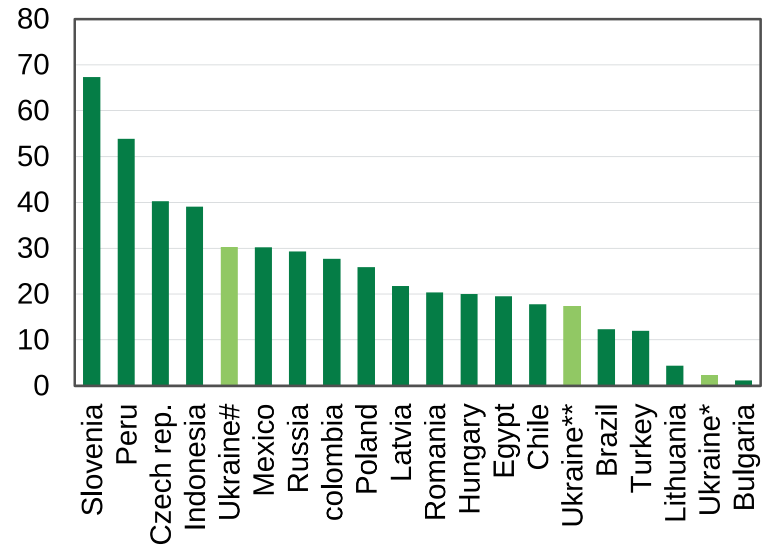
- The forecast relied on conservative assumptions about Ukraine's risk premium amid double elections and IMF cooperation uncertainty, food price pressure, higher energy prices (both external and domestic) and inflation in main trading partner countries
- By August 2019, actual inflation exceeded the forecast path produced in January 2019
- A sharp deceleration by the end of 2019 reflected several powerful factors: record high grain and sunflower harvests, falling energy prices and a structural shift in foreign investors' attitude towards investing in Ukraine

Favorable Ukraine's risk reassessment by foreign investors were the key driver of their portfolio investments in Ukraine

Ukraine's sovereign ratings



The share of foreign investments in local currency domestic government bonds, %

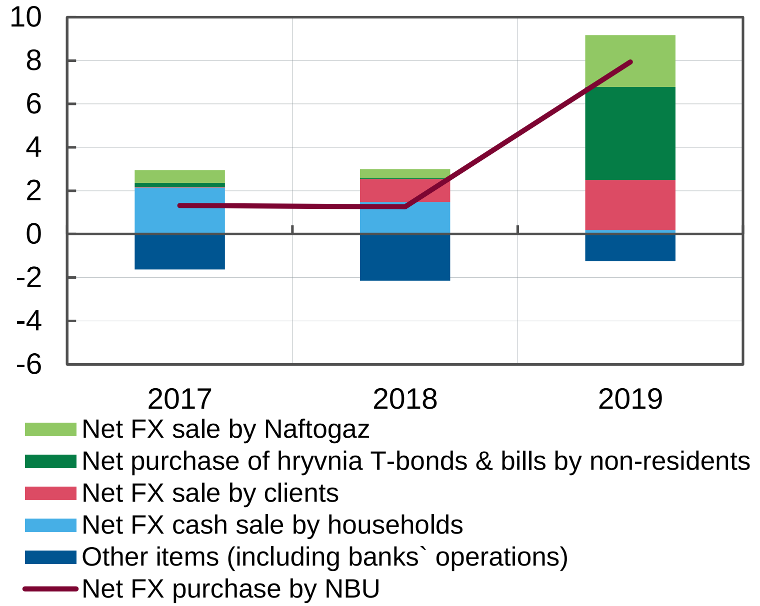


Note: Excluding NBU portfolio in a case of Ukraine
* As of 01.01.2019, ** as of 01.07.2019, # as of 01.01.2020
Source: IMF, NBU estimates.

- Risk reassessment reflected free elections, quick formation of the new government, commitment of the Ukrainian authorities to continue sound macro policies (including further cooperation with the IMF) and speed-up structural reforms
- Other factors included:
  - Past under-investment of Ukraine compared to other EM countries
  - Improved access to domestic market thanks to a link with Clearstream
  - Attractive Ukrainian yields and benign global financial conditions

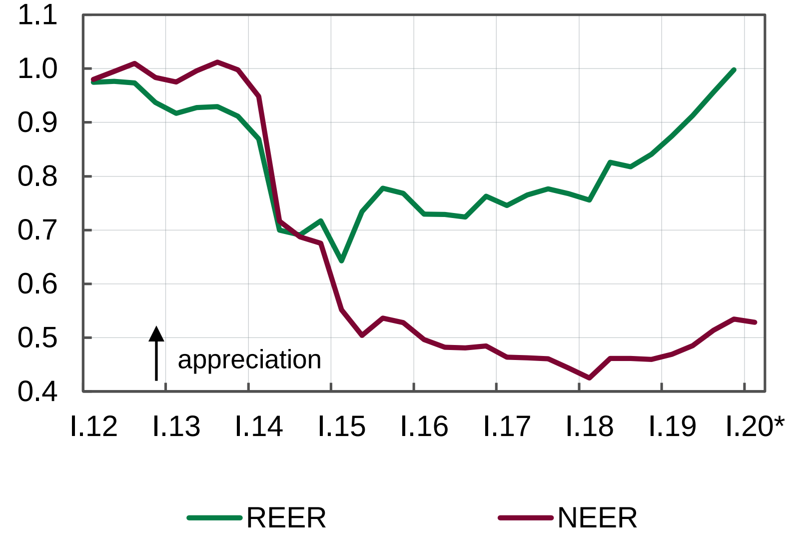
Being very powerful, the factor of portfolio inflows into hryvnia securities was not the only contributor to hryvnia appreciation

Determinants of the NBU interventions, USD bn



Source: NBU`s estimates.

Hryvnia REER and NEER indices, monthly average, 12.2011=1

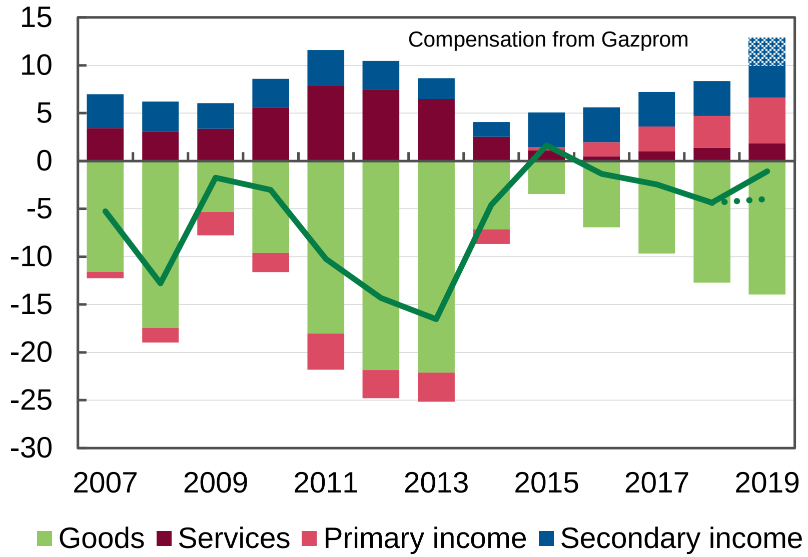


* As of 20.01.2020.
Source: NBU`s estimates.

- Non-resident purchases of hryvnia T-bonds & bills explained only about 16% and about ½ of NBU FX interventions in December and the whole 2019, respectively
- Appreciation was also supported by strong agricultural exports, subdued energy imports and robust inflow of borrowed capital to private sector in the second half of the year

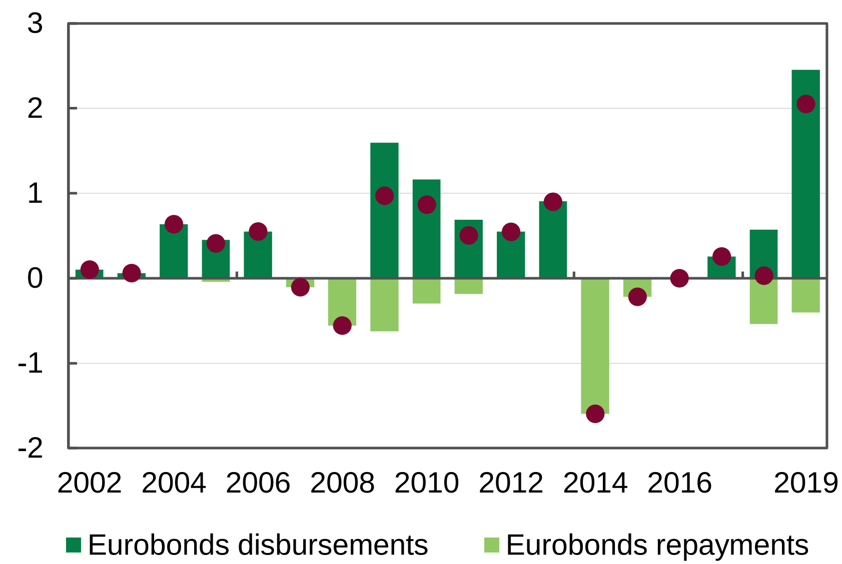
Despite UAH appreciation, external position of Ukraine stayed resilient and even improved

Current Account Balance, USD bn



Dotted line – excluding the compensation paid by Gazprom.
Source: NBU.

Real sector net borrowings, USD bn

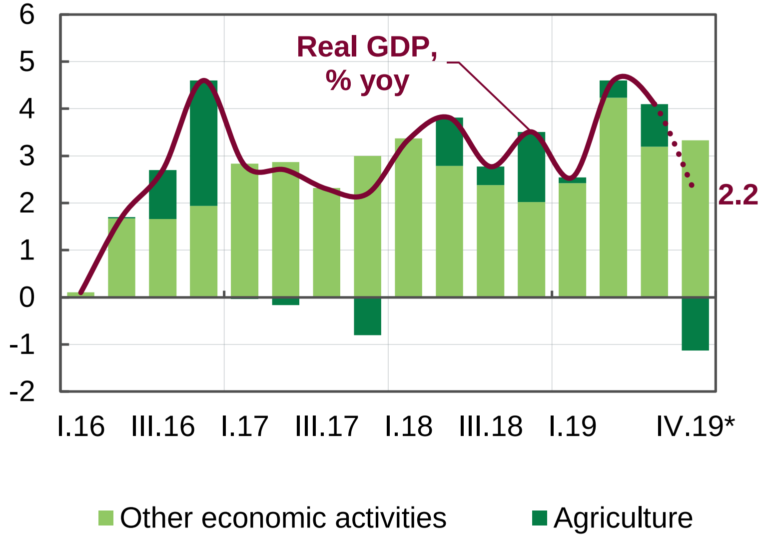


Source: NBU.

- The CA deficit narrowed due to higher remittances, lower dividends and rising surplus of trade in services
- Despite hryvnia appreciation and the large gas purchases, merchandise trade deficit widened only moderately in USD terms and narrowed with respect to GDP
- Consumer and investment imports have been rising at a relatively steady pace throughout the year
- Improved investors' sentiments led to a record high borrowed capital to real sector. FDI inflows to the sector (excluding Vodafon deal) rose 60% in 2019

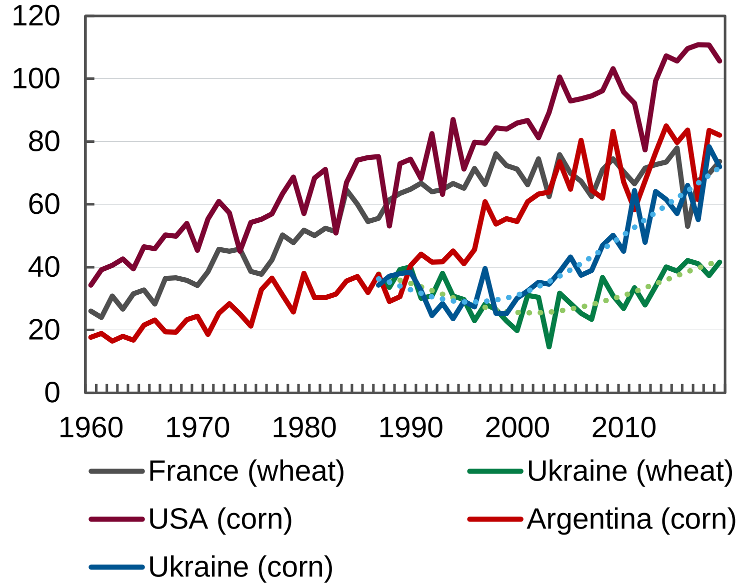
The Ukrainian economy has lost some momentum by the end of 2019, mainly on account of agriculture and industry

Contribution of agriculture to annual real GDP growth, pp



Source: SSSU, NBU staff estimates.

Crop yields in selected countries

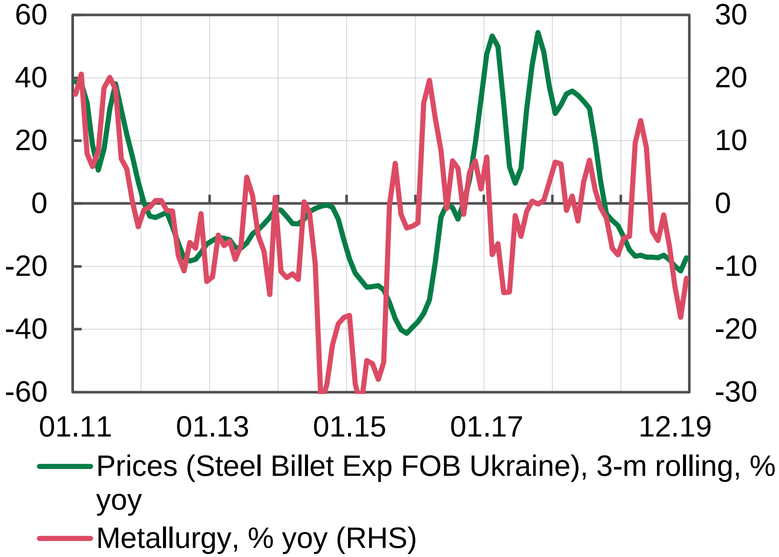


Source: SSSU, NBU staff estimates.

- Real GDP was estimated to increase by 3.3% yoy in 2019, suggesting Q4 growth weakened to 2.2% yoy
- Agriculture drove economic growth in Q2-3, but has a negative contribution in the last quarter, reflecting statistical effect of faster harvesting works in the previous quarter
- Overall, agriculture grew by 1.1% in 2019. Despite new record high harvests of grains and sunflower seeds, relatively moderate increase reflect high base effect, stagnation in animal breeding, and weaker harvest of select other crops (e.g., potato, apples, etc.)

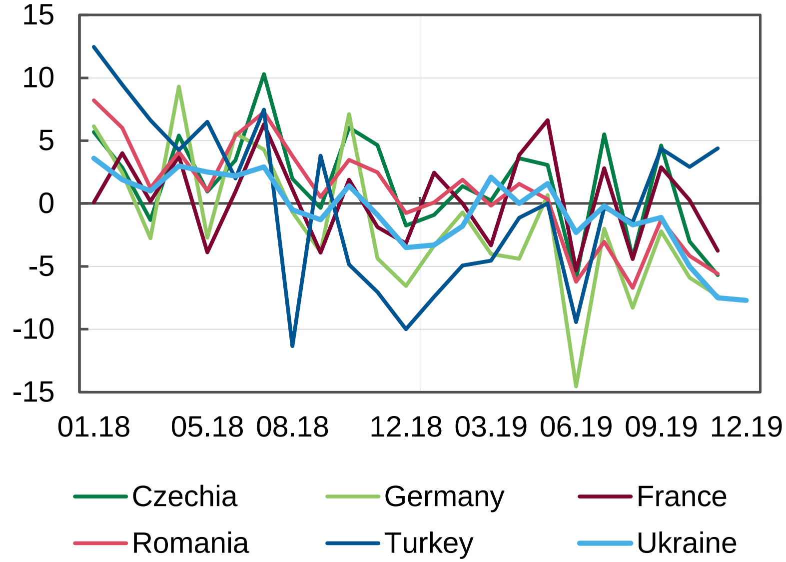
Sluggish global trade and a fall in commodity prices adversely affected manufacturing activity in many countries

Growth rates of metallurgy in Ukraine and external prices for Ukrainian steel semi-finished products



Source: SSSU, Refinitiv Datastream.

Industrial production in Ukraine and selected countries, % yoy

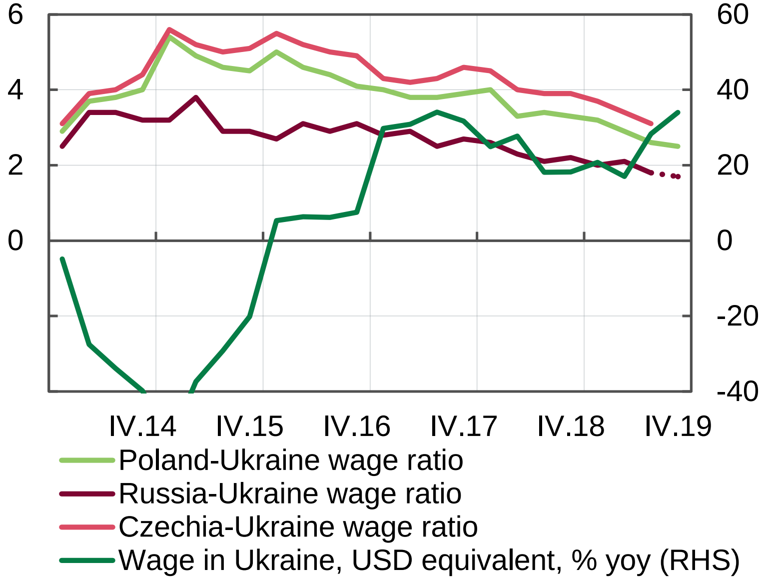


Source: Eurostat, State Statistics Service of Ukraine.

- Ukrainian industrial production decreased 1.8% in 2019, with about a half of it attributed to weaker energy sector performance. The latter was partially attributed to warm winters
- Other factors included
  - Sluggish external demand and a fall in word steel prices (by an average of 15-20%). Ukraine was not alone in reporting a decrease in industrial production but due to its commodity-oriented structure it was hit more than other countries
  - Russia's trade restrictions on Ukrainian machinery, introduced at the end of 2018

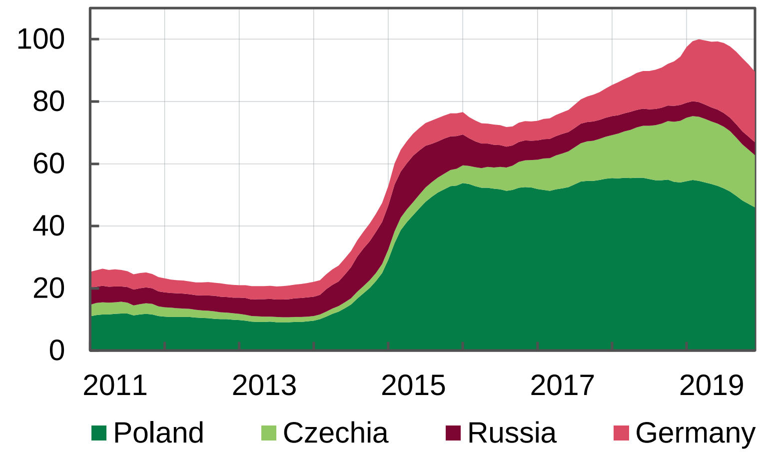
Hryvnia appreciation allowed the Ukrainian employers to become more competitive for labor amid domestic market tightness

Ratio of net wages to Ukraine and wage growth in Ukraine



* dotted lines show average for October – November.
Source: statistical agencies and central banks of respective countries, OECD.

Migration Sentiments Index (12-m rolling)*

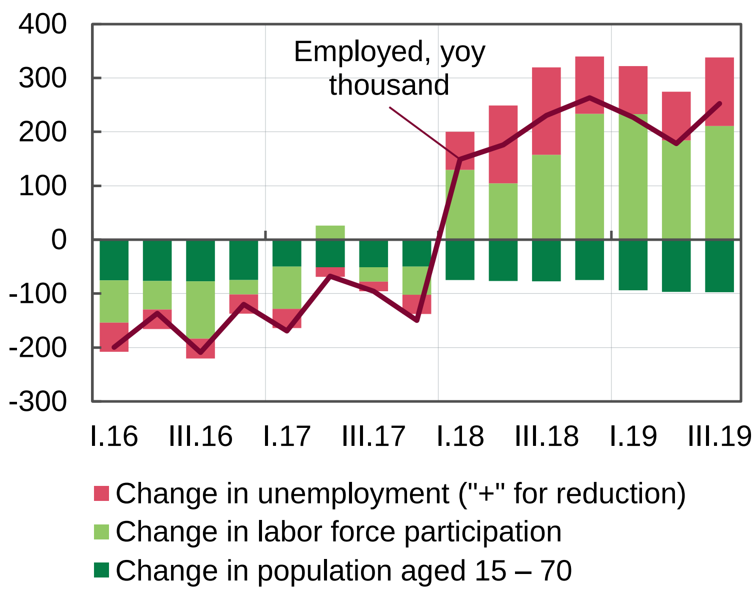


* The Index is constructed from Google Trends data based on search inquiries from Ukraine. Search inquiries are entered in Ukrainian, Russian, and in respective country language (eg. in Polish "praca w Polsce"). Index is set at 100 for the last maximum of search activity (March 2019).
Source: Google Trends, NBU staff estimates.

- Higher wages abroad are the main reason for labor migration, according to survey results
- Recent appreciation of hryvnia has contributed to shortening the wage gap between Ukraine and other countries
- As a result, interest in working in Poland, Czechia and Russia has weakened
- Interest in work in Germany is on the rise, but significant barriers to employment there are expected to remain

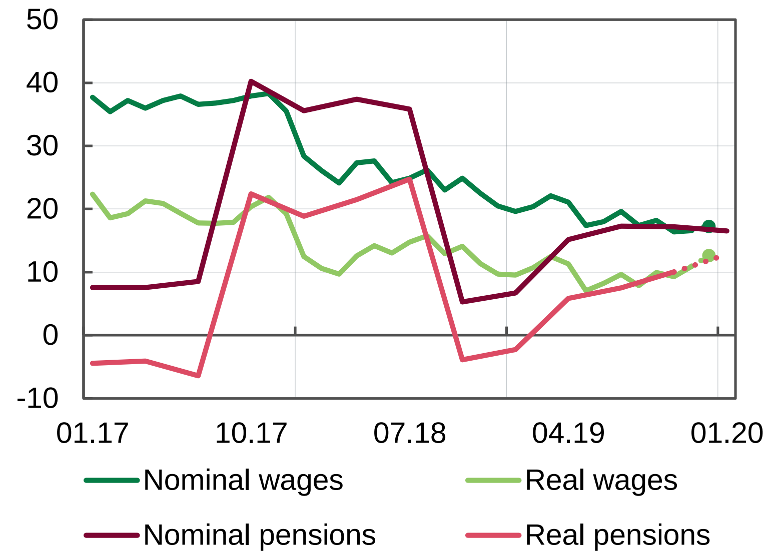
Wage growth was driven by solid economic growth and…

Decomposition of changes in employment (thousand yoy)



Source: SSSU, NBU staff estimates.

Nominal and real wages and pensions, % yoy

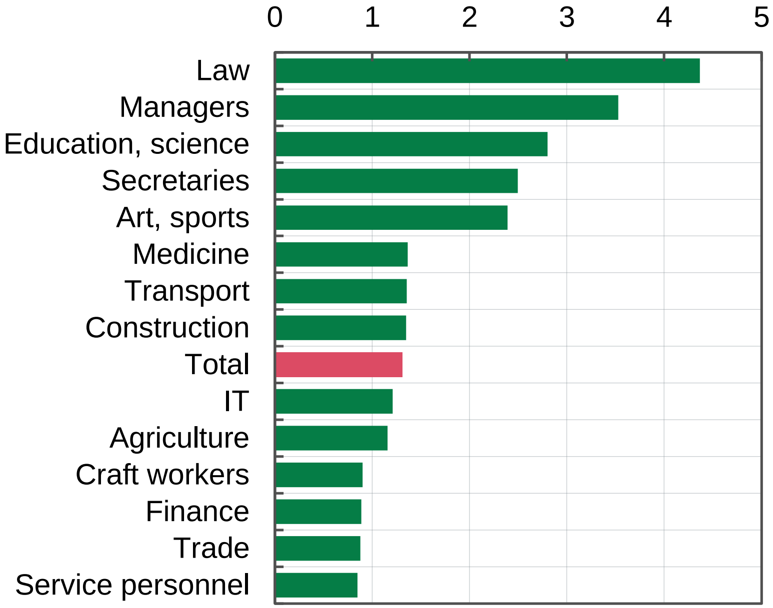


* Dotted lines illustrate nowcast.
Source: SSSU, NBU staff estimates.

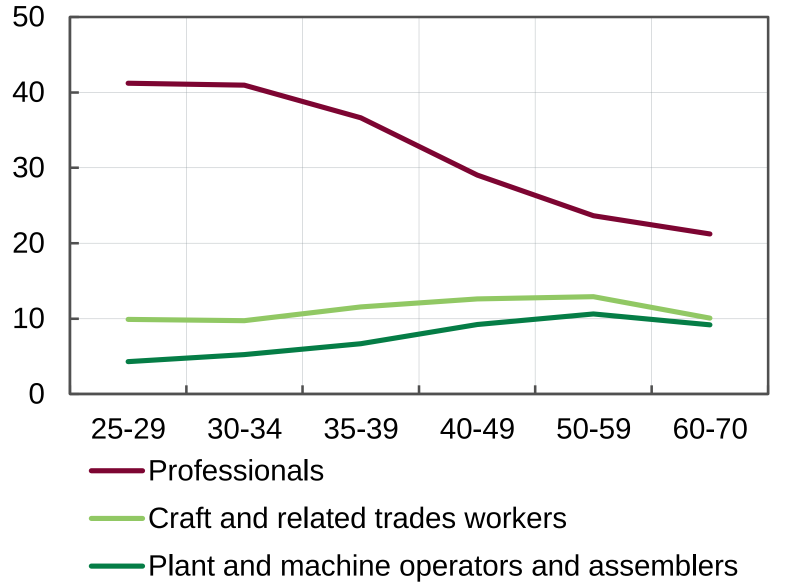
- Despite decreasing population, employment continued to increase thanks to robust labor demand and growing labor participation
- Rising labor participation is attributed to ongoing effect from tightened pension system participation rules and robust increase in wages over the last couple of years
- Strong increase in wages and pension supported private consumption, which was the main driver of economic growth in 2019

…labor market mismatches

Number of work.ua new resumes per new vacancies

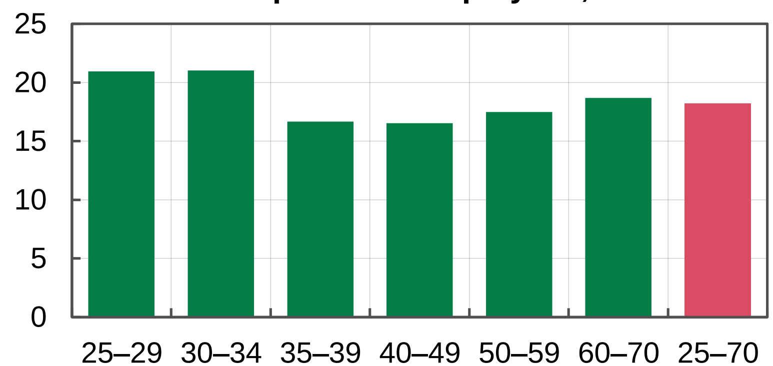


Population by occupation according to received diploma, 2018, % of respective age group population



- The labor market still lacked craft workers, at the same time higher-educated professionals such as lawyers were in excess supply
- This was due to the youth obtaining "fashionable" professions instead on those needed in the labor market. A higher share of them are overeducated for their jobs

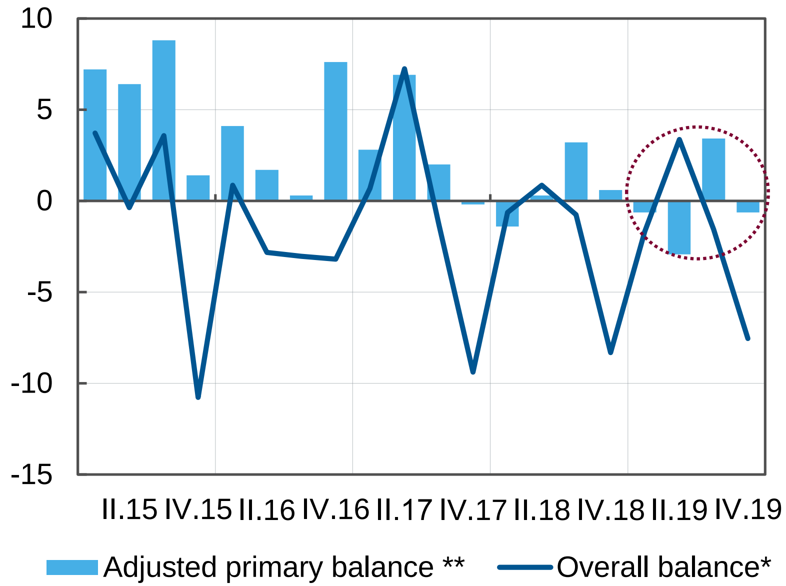
The share of overqualified* employees, %



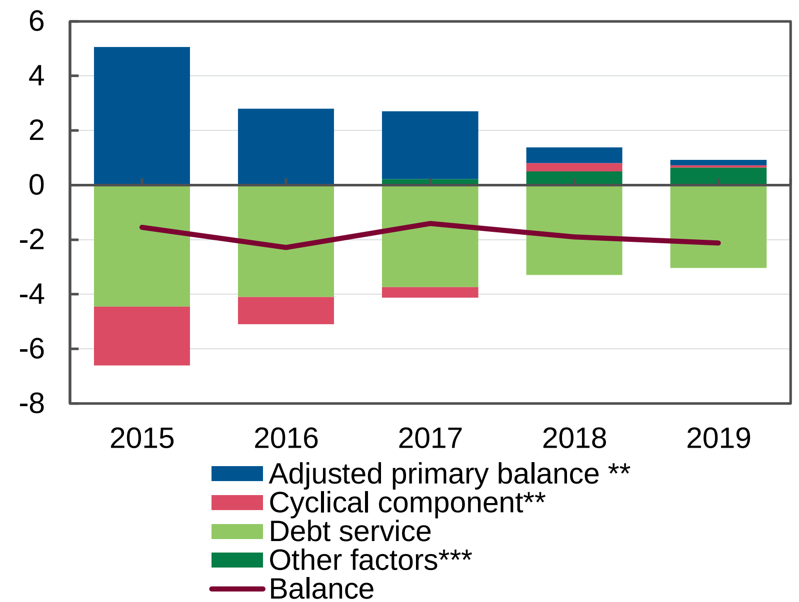
* Overqualified workers are defined as those who have attained tertiary education and who work in occupations for which a tertiary education level is not required. Source: work.ua, Labor Force Survey (SSSU microdata), NBU staff estimates.

In 2019, fiscal policy softened compared to previous year, mainly in H1 2019

Public sector fiscal balance



Consolidated budget balance, % of GDP



* Balance (% of GDP) – consolidated budget balance incl. PFU loans.

**Adjusted primary fiscal balance (CAPB, % of potential GDP) of the general government is the difference between seasonally adjusted revenues, in the structure of which tax revenues are adjusted for cyclical changes in GDP, and seasonally adjusted primary expenditures). Additionally, one-off proceeds (such as unplanned funds from special confiscation and effects from the Stockholm Arbitration) are subtracted from revenues. Positive value means tight fiscal policy, negative – expansionary fiscal policy.

*** Other factors include mostly windfall gains.

Source: Treasury, NBU staff estimates.

- In 2019, the state budget deficit widened compared to 2018 but stayed almost flat with respect to GDP
- The deficit for the whole year was mainly formed by large debt service expenditures
- Overall fiscal policy impact on the Ukrainian economy remained neutral, but it differed throughout the year

Forecast summary

- Economies of trading partners start to accelerate gradually
- The external price environment for Ukrainian exporters marginally worsening compared to 2019
- **Stronger exchange rate** due to lower risks and inflow into Gov`t securities
- **Headline inflation: below the target range for most of this year** and **going back to target range by the end-2020**
- **Economic growth** accelerates due to monetary stimulus, investors sentiments improvement and structural reform implementation
- **Fast key policy rate decrease**
- **CA widening** due to lower transit in 2021-2022 and higher investment import

Summary

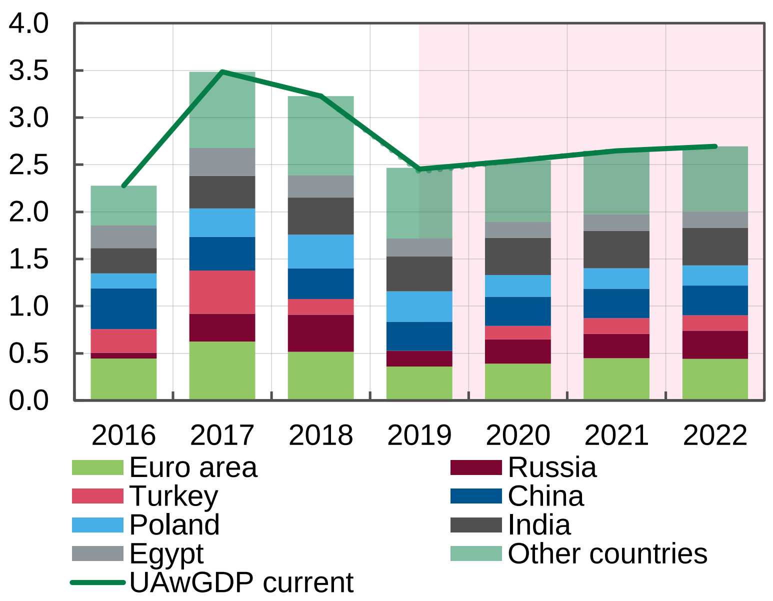
	2018 actual	2019 actual/estim.	2020 forecast	2021 forecast	2022 forecast
Real GDP, change, %	3.4	3.3 (3.5)	3.5 (3.5)	4.0 (4.0)	4.0
Nominal GDP, UAH bn	3 561	3 975 (4 020)	4 290 (4 420)	4 682 (4 850)	5113
CPI, y-o-y, %	9.8	4.1 (6.3)	4.8 (5.0)	5.0 (5.0)	5.0
Core CPI, y-o-y, %	8.7	3.9 (5.3)	3.5 (3.7)	3.8 (3.8)	3.8
Current account balance, USD bn	-4.4	-1.1 (-4.0*) (-4.5)	-5.7 (-5.7)	-7.9 (-7.5)	-8.0
% GDP	-3.3	-0.7 (-2.6*) (-2.9)	-3.2 (-3.3)	-4.1 (-4.0)	-4.0
BOP (overall), USD bn	2.9	6.0 (2.6)	3.2 (0.6)	1.6 (-1.1)	0.4
Gross reserves, USD bn	20.8	25.3 (23.0)	29.3 (24.0)	31.6 (23.1)	32.3

in ( ) – previous forecast (IR, October 2019)

* - w/o “Gazprom” payments

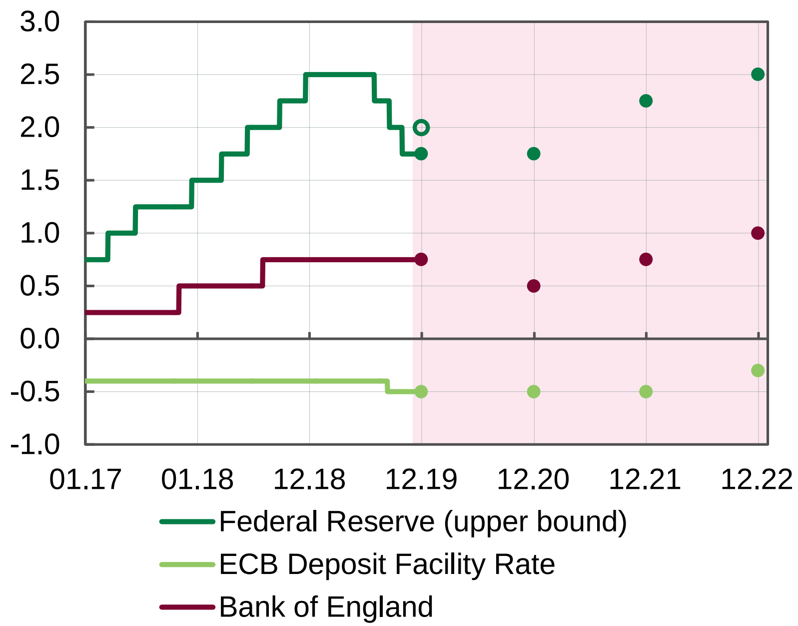
Economies of trading partners start to accelerate gradually. Major central banks has entered an easing mode to support growth

Contributions of countries to UAwGDP, % y-o-y



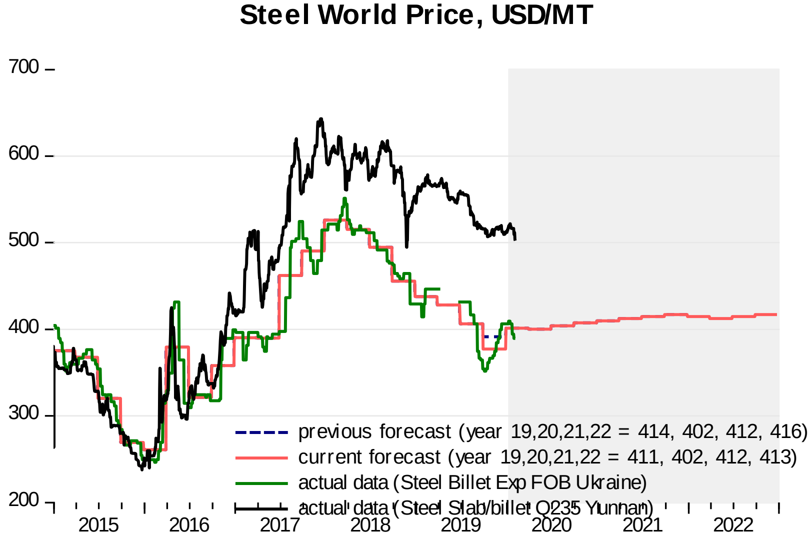
Source: NBU estimate.

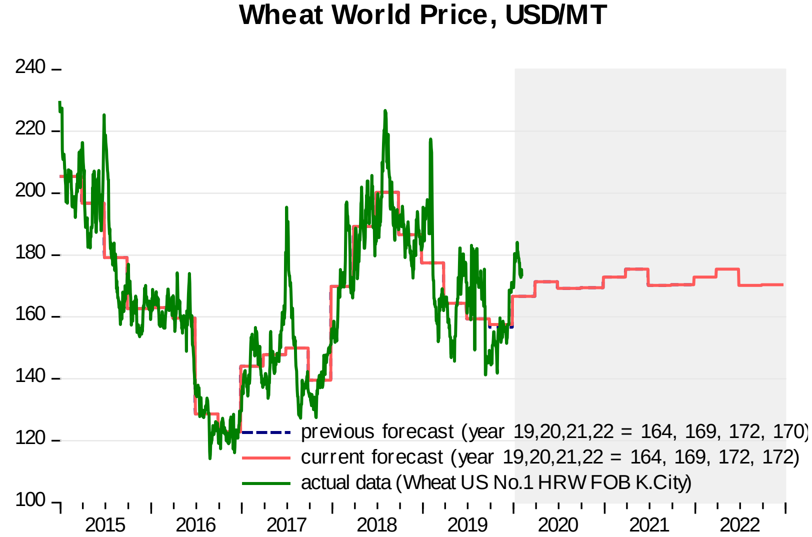
Key policy rates of major central banks, % eop

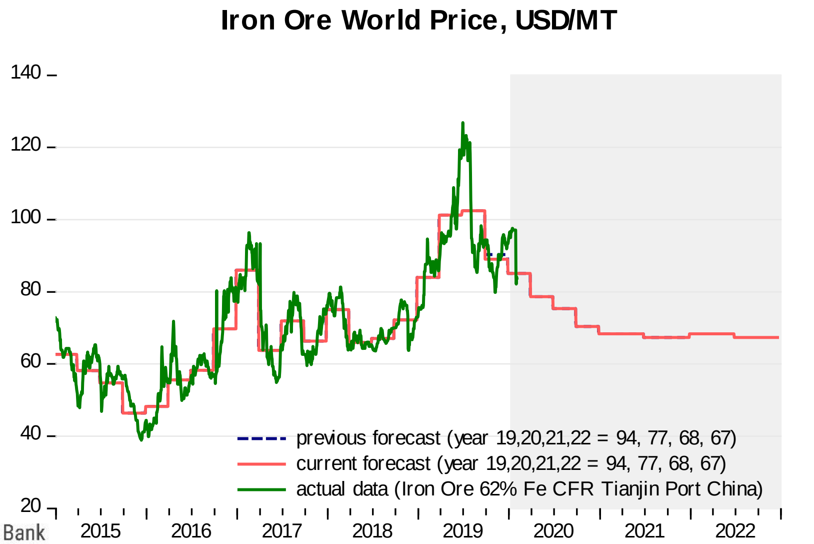


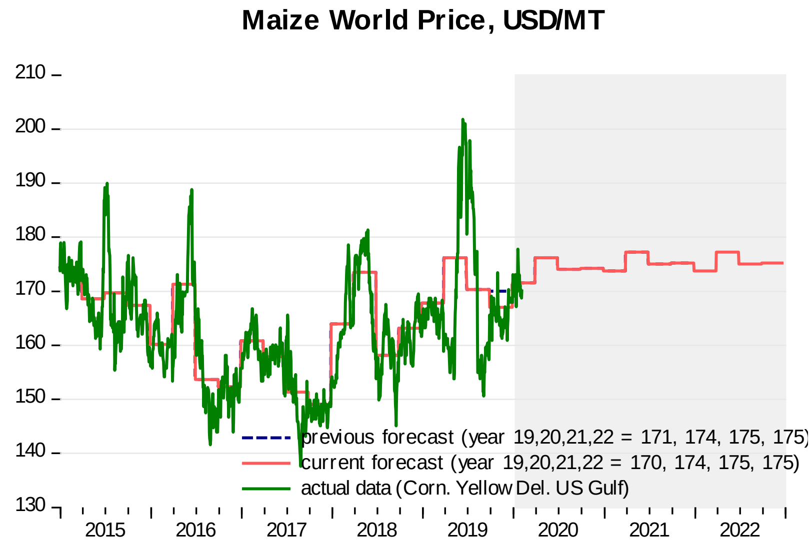
* Unfilled dots indicate previous forecast.
Source: official web-pages of central banks, NBU estimates.

The external price environment for Ukrainian exporters marginally worsening compared to 2019 (unchanged from IR October)



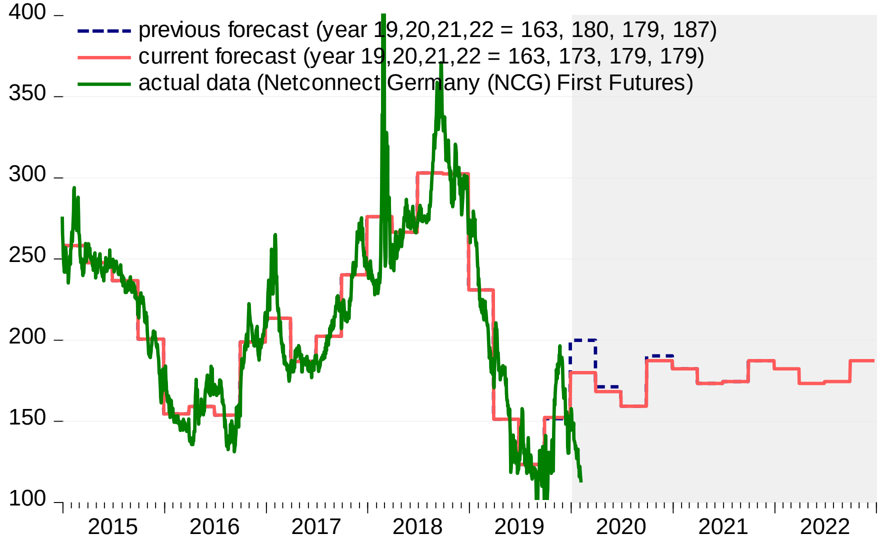




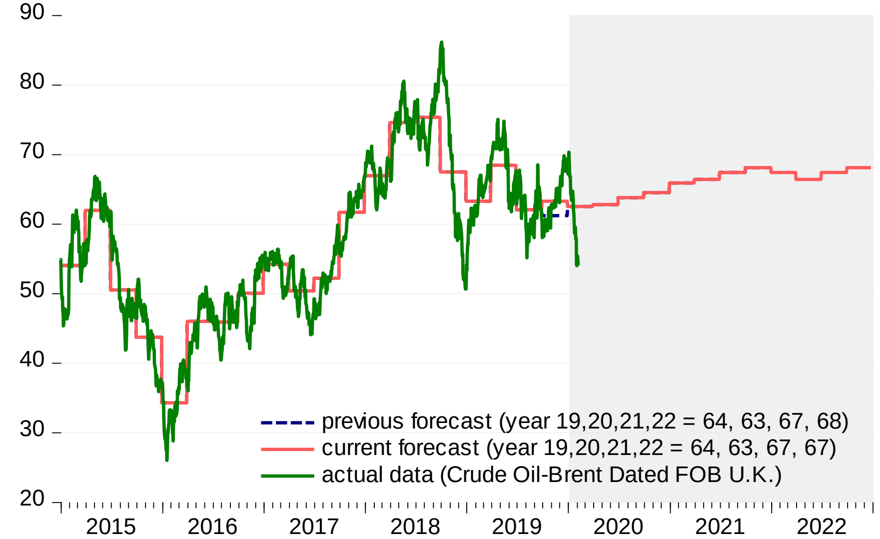


Gas price on European market would be lower due to new transit agreement (no gas crisis in Q1 2020) and warm winter (2019/20)

Natural Gas Price, USD/1000m3



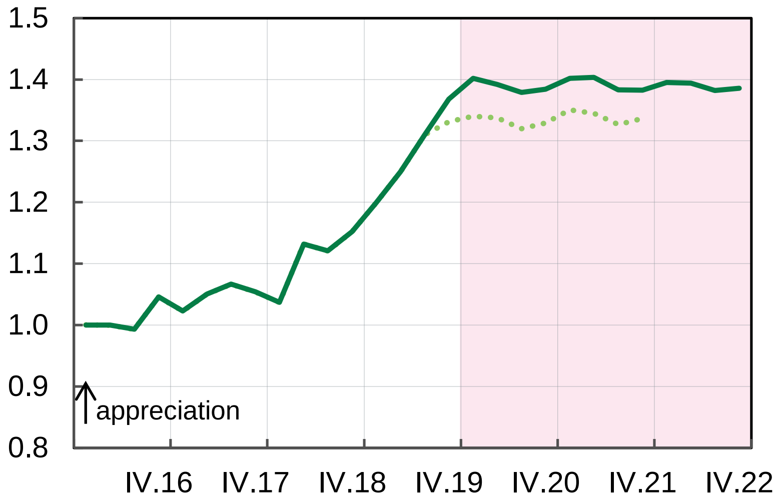
Brent World Price, USD/bbl



Transit volumes, bn. m3	2020	2021	2022
Contract	65	40	40
Previous assumptions	50	30	30

REER will be flat on forecast horizon on the back of monetary policy loosening

REER, index (I.2016=1)

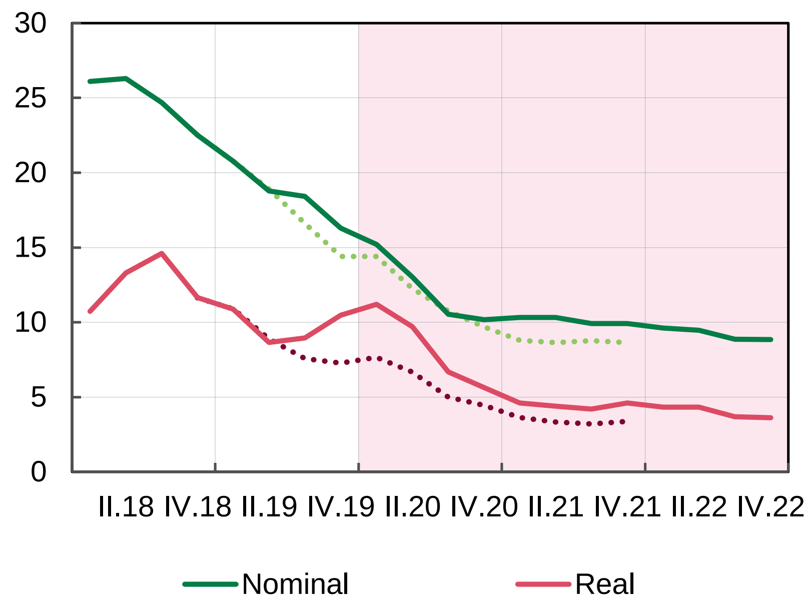


average	2019	2020	2021	2022
REER, % change	15.4 (14.6)	8.4 (4.6)	0.3 (0.6)	-0.3

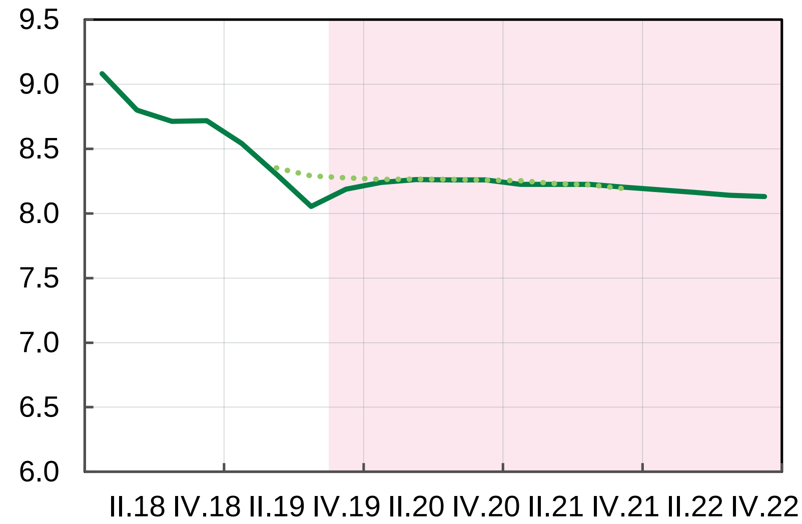
in ( ) – previous forecast (IR, October 2019)

Real wages still ↑ due to strong demand for labor (revised ↑ upwards for 2020) but slowdown due to weakening migration

Nominal & Real wages, annual change, %



ILO unemployment, sa, %

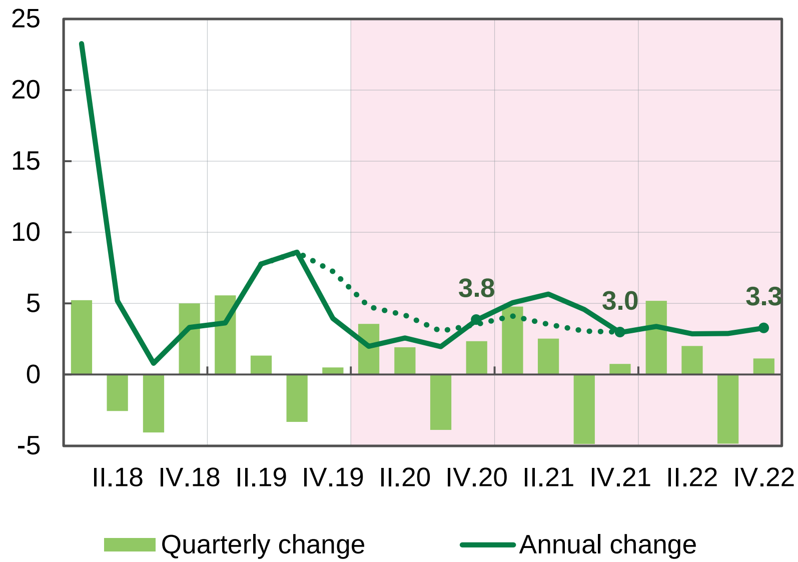


change, %	2019	2020	2021	2022
Real wages	**9.7**	**8.2**	**4.5**	**4.0**
- previous forecast	*9.2*	*6.0*	*4.0*	
Nominal wages	**18.5**	**12.1**	**10.1**	**9.2**
- previous forecast	*18.2*	*12.0*	*9.3*	

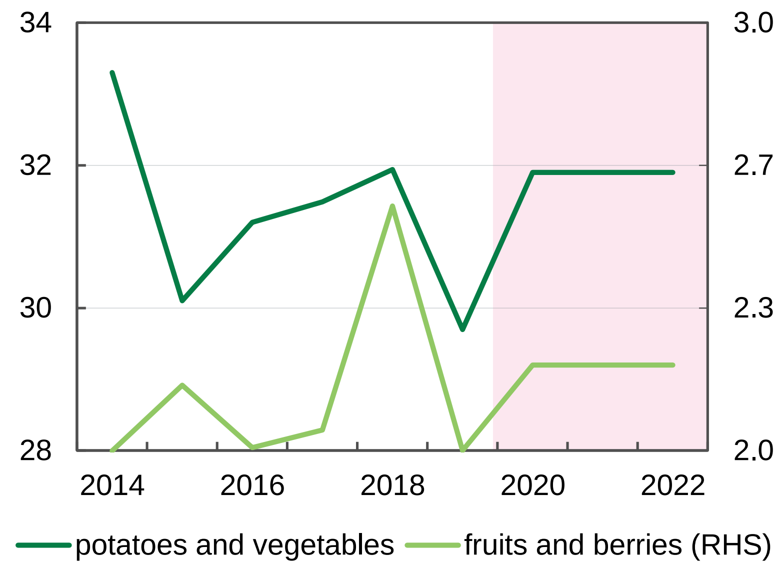
	2019	2020	2021	2022
Minimum wage, UAH	**4173**	**4723**	**5003**	**5290**
- previous forecast	*4173*	*4723*	*5003*	
change, %	***12.1***	***13.2***	***5.9***	***5.7***

Raw food inflation stabilizes at 2-4% w/o supply shocks

Raw food inflation, %



Harvest of vegetables and fruits, m t



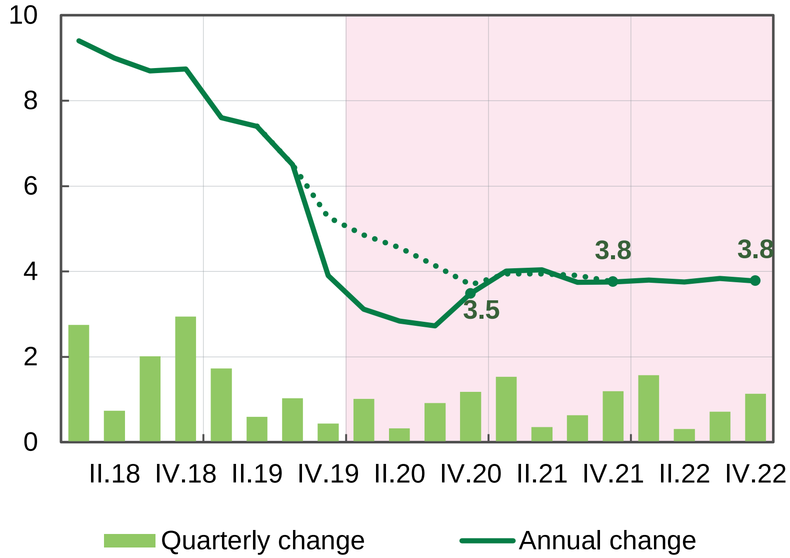
- In 2020-2022 is expected to increase the yield of potatoes with vegetables, as well as fruit and berry crops due to higher yields due to more favorable weather conditions

	2018	2019	2020	2021	2022
Grain harvest, mn. t.	70	76	75	77	79

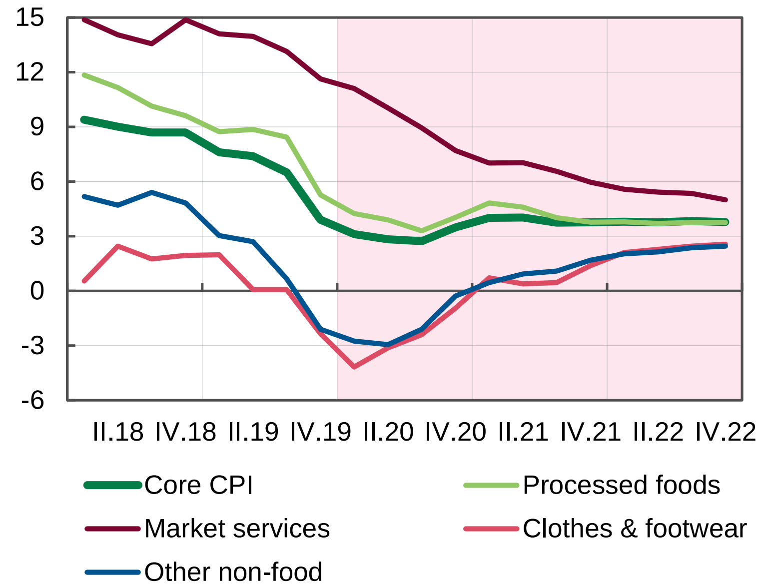
National Bank of Ukraine

Core CPI: strong disinflation in 2020 due to effects of ER appreciation in 2019

Core Inflation, %



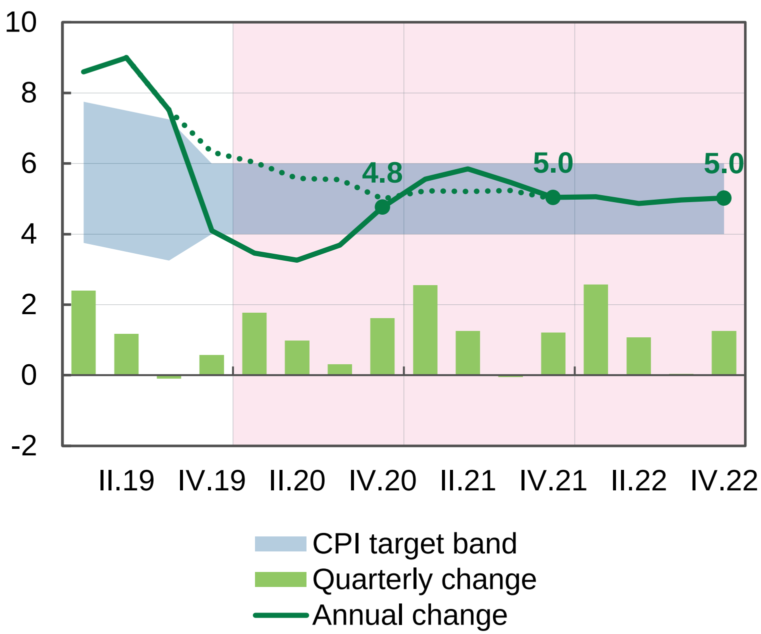
Core CPI and its components, y-o-y change, %



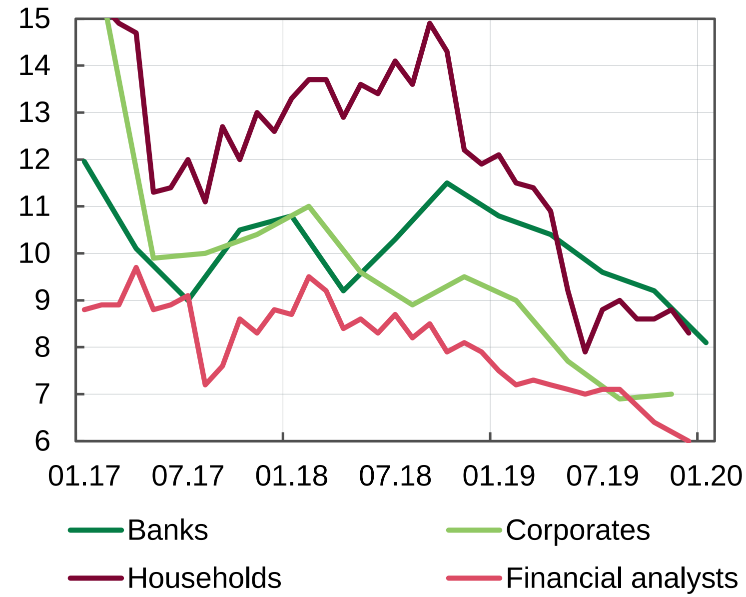
	2019		2020		2021		2022
	actual	*prev.*	***new***	*prev.*	***new***	*prev.*	***new***
Core CPI	**3.9**	***5.3***	**3.5**	***3.7***	**3.8**	***3.8***	**3.8**
Processed foods	5.3	*7.0*	4.0	*4.0*	3.8	*3.6*	3.8
Market services	11.6	*10.9*	7.7	*6.5*	6.0	*5.7*	5.0
Clothes & footwear	-2.3	*0.7*	-0.9	*0.6*	1.4	*2.0*	2.6
Other non-foods	-2.1	*0.1*	-0.3	*1.3*	1.7	*2.3*	2.5

Headline inflation: below the target range for most of this year and going back to target range by the end-2020

Headline CPI, %



CPI expectations, %

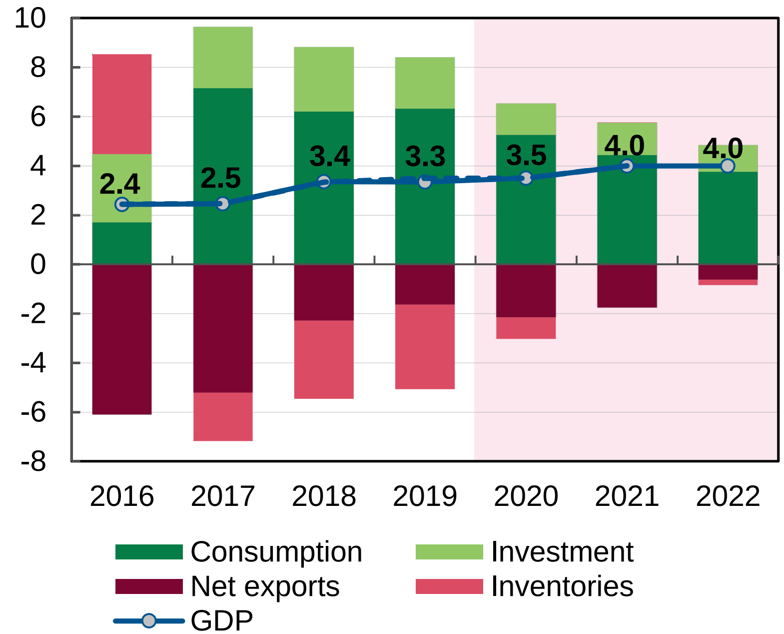


change, %	*weight, %*	2019		2020		2021		2022
CPI	***100.0***	**4.1**	*6.3*	**4.8**	*5.0*	**5.0**	*5.0*	**5.0**
Core CPI	*58.9*	3.9	*5.3*	3.5	*3.7*	3.8	*3.8*	3.8
Raw food	*18.6*	3.9	*7.2*	3.8	*3.5*	3.0	*3.0*	3.3
Admin	*18.5*	8.6	*11.7*	9.3	*10.0*	9.8	*9.8*	9.1
Fuel	*4.0*	-8.2	*-2.3*	3.9	*5.8*	6.5	*5.7*	5.0

grey – previous forecast (IR, October 2019)

Economy accelerates due to monetary stimulus, investors sentiments improvement and structural reform implementation

GDP, %

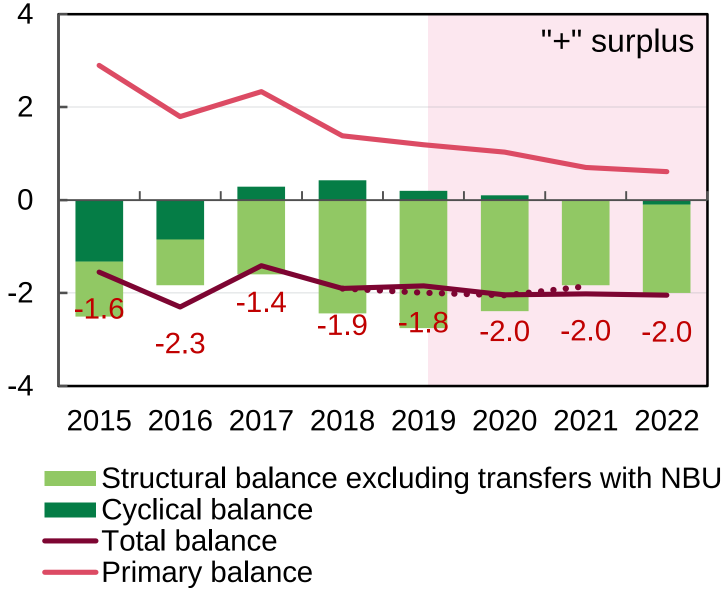


	W, %	2019	2020	2021	2022
GDP	100	**3.3 (3.5)**	**3.5 (3.5)**	**4.0 (4.0)**	**4.0**
Consumption	87	7.0 (5.7)	5.7 (3.9)	4.8 (4.5)	4.1
Private consumption	66	10.2 (8.5)	7.0 (4.5)	5.7 (5.2)	4.7
Gross fixed capital formation	16	12.2 (9.3)	7.3 (7.3)	7.3 (6.9)	6.0
Exports of G&S	48	6.0 (3.4)	3.3 (3.6)	1.9 (1.9)	2.5
Imports of G&S	56	8.0 (7.1)	7.2 (4.1)	5.6 (4.7)	3.4

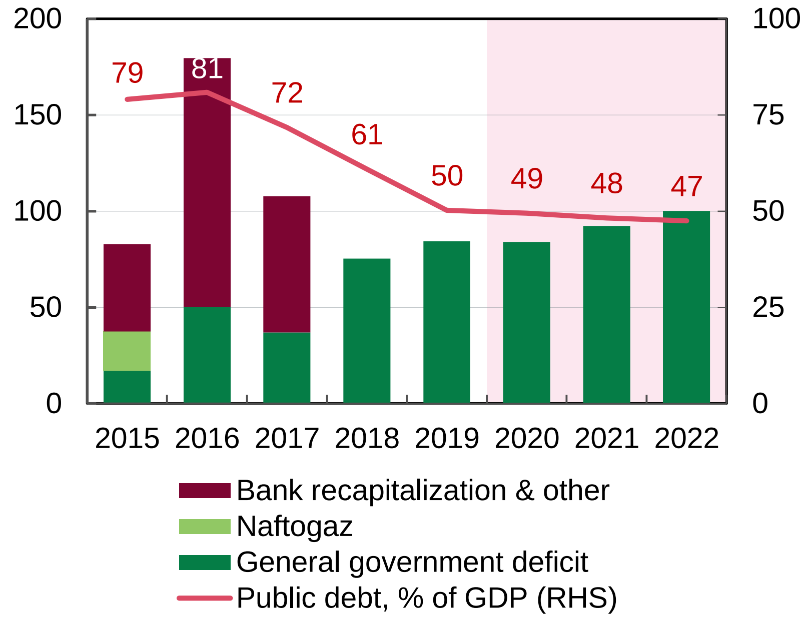
in ( ) – previous forecast (IR, October 2019)

Fiscal policy will continue to be restrained in 2020-2022

Consolidated Budget Balance, % of GDP



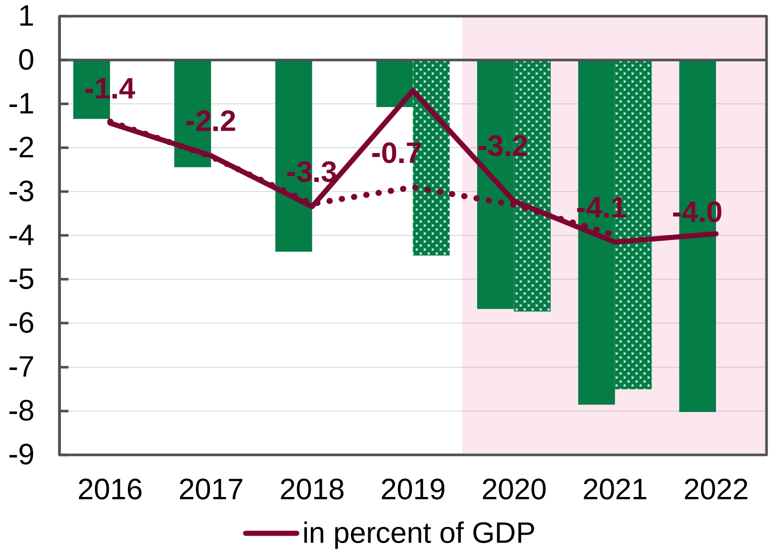
Public sector deficit, UAH bn, and public debt-to-GDP ratio, %



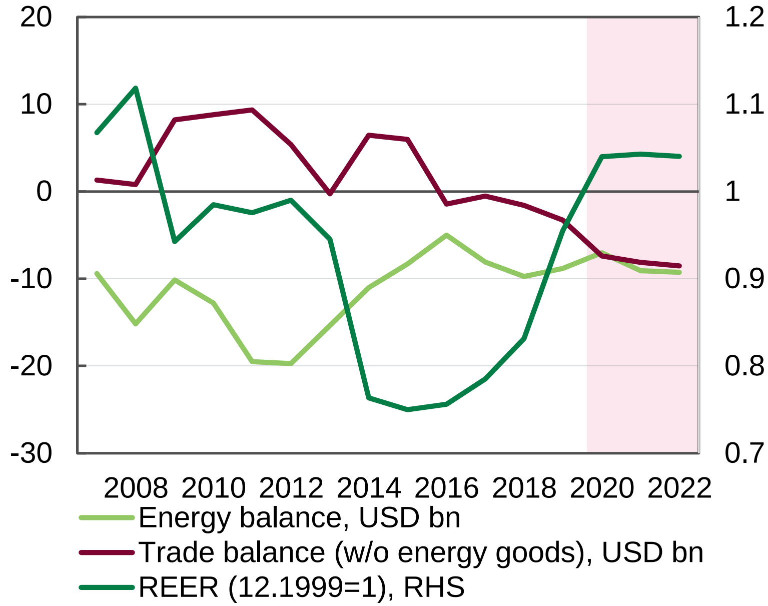
- The consolidated fiscal deficit is forecast to remain at about 2% of GDP in 2020-2022 primarily because of large public debt financing needs amid peaks in external debt repayments
- The public debt-to-GDP is forecast to decrease further

In 2020-2022, CA deficit widens due to strong REER and lower gas transit. However, restrained in 2020 due to lower gas imports

Current Account Balance, USD bn



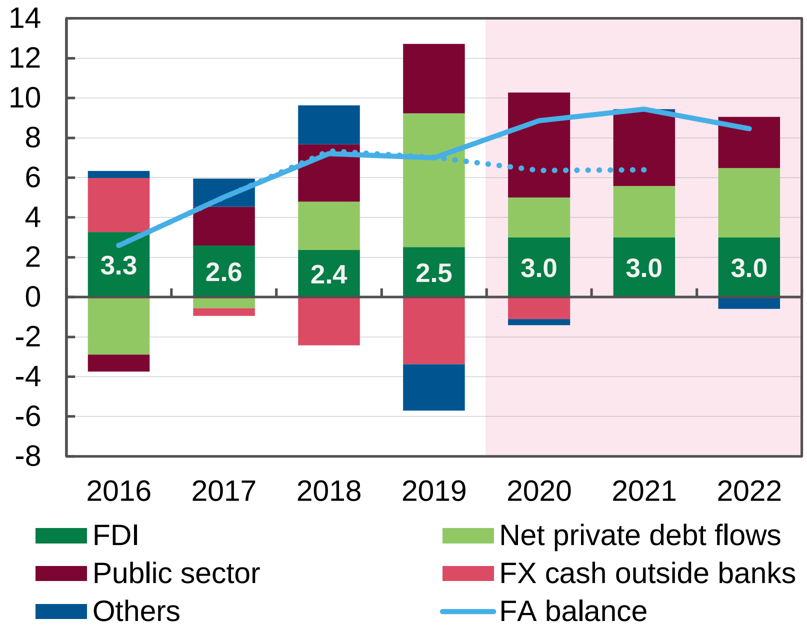
REER and Trade Balance



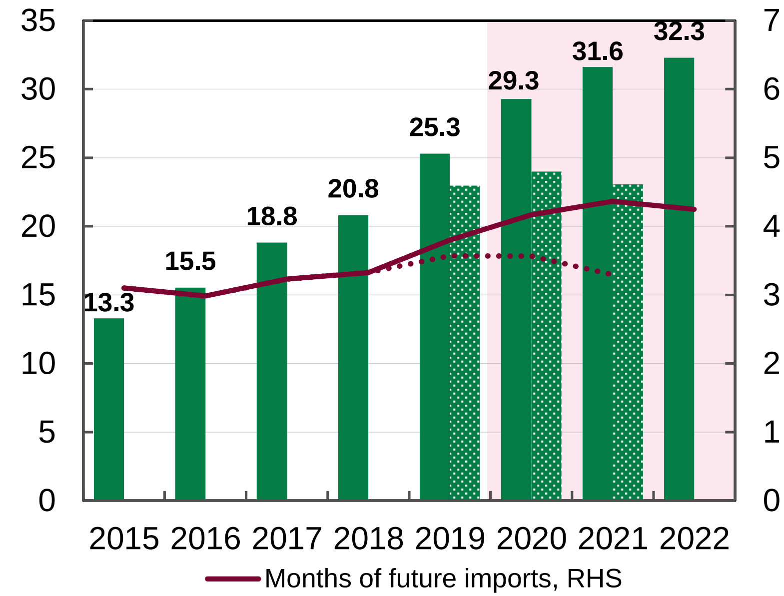
Main changes in CAB forecast in 2020-2021 compared with IR October	
Trade in goods	Terms of Trade (≈): ↓iron ore, ↑grains
	↓Volumes of exports: ↓agro, ↓iron ore, ↑machinery ↑Volumes of imports: ↑↑machinery, ↑agro
Trade in services	↑ Volumes of gas transit, ↑ IT services
Income	↑ Remittances, ↑ Dividends in 2020

In 2020-2022, debt and investment capital inflows to private sector will remain the major source of financing the CA deficit

Financial account: net inflow, USD bn



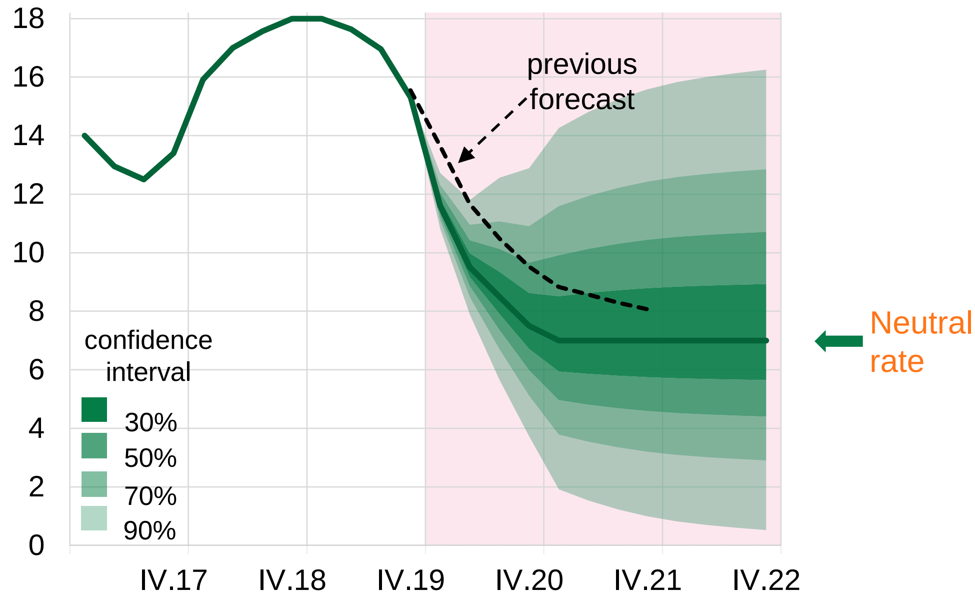
International Reserves, USD bn



- In 2020-2022, NBU interventions will absorb inflows from non-residents to G-bonds,
- Reserves will reach 100% ARA in 2021

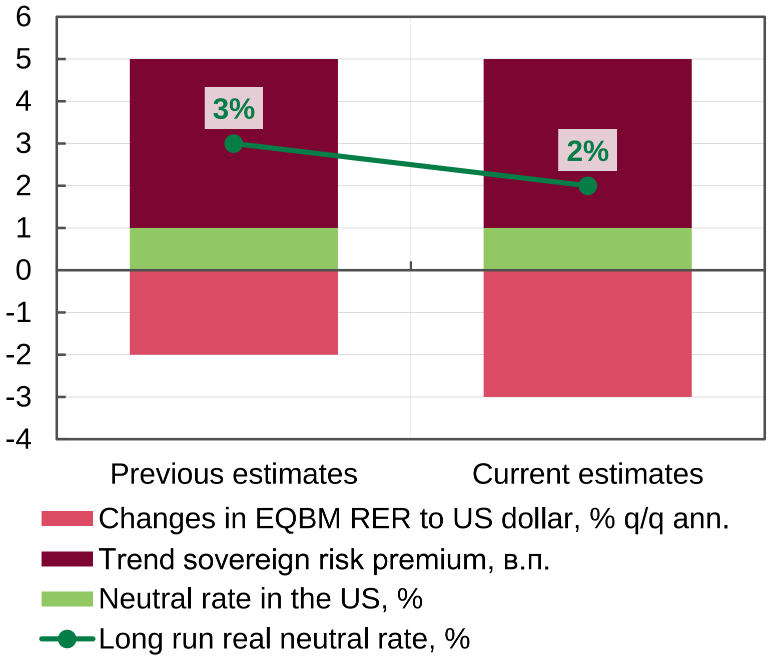
Due to rapid improvement in Ukraine's macroeconomic conditions, the NBU now expects to cut the key policy rate more quickly

Key rate uncertainty, %



Box. Real neutral interest rate was revised from 3% to 2% (as we reassessed EQBM real exchange rate in 2014-2019 and onwards)

Long term real neutral interest rate decomposition



Source: NBU estimate.

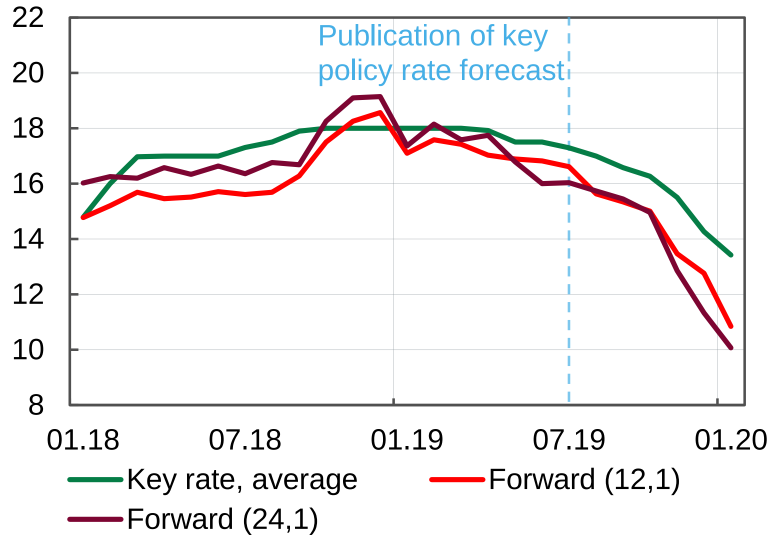
Nominal IR = Real IR + inflation target

7 = 2 + 5

- Recent and forecasted EQBM RER appreciation was revised downwards (strengthened)
- The revision was triggered by recent high RER appreciation
- It decreases our estimates of the long term real neutral interest rate from 3% to 2%. Foreign investors settle for lower interest returns as they expect their investments' value to appreciate
- Nominal neutral interest rate on the forecasting horizon decreases from 8% to 7%

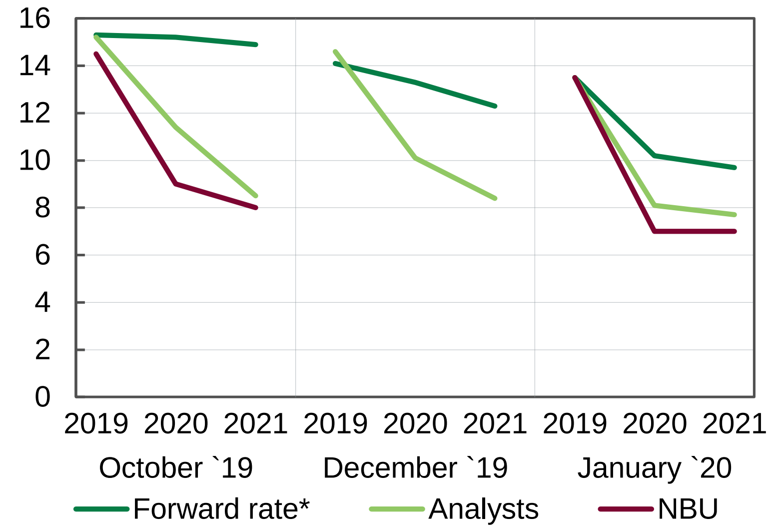
Box. Forward rates have fallen since 2019 due to monetary policy easing and publication of NBU`s key policy rate forecast

Key policy rate and forward rates*, %



* Forward rate (*x*,*y*) denote a yield of a financial instrument with a *y*-month maturity after *x* months
Source: NBU staff estimates.

Forward rates, expectations of financial analysts and NBU`s forecast of key policy rate, eop, %



* Estimated forward rate with a 1-month maturity based on hryvnia government bond yield curve.
Source: NBU staff estimates.

- In the past forward rates responded mostly to the current changes in interest rates
- The publication of NBU`s key policy rate forecast since July 2019 has decreased uncertainty regarding future monetary policy and has led to decline of both expectations of future interest rates and actual forward rates
- However there is still some room for further decline in forward rates. It will be driven by improvement of macroeconomic fundamentals (including inflation expectations anchoring at 5%), widening the investor base, financial market deepening and its liquidity increase

Risks

The key risk to the forecast is that there is a delay in entering into a new cooperation program with the IMF

Risks to macrofinancial stability also remain. These risks could mainly arise from Ukrainian court rulings on the responsibility and liability of the former owners of insolvent banks to the state.

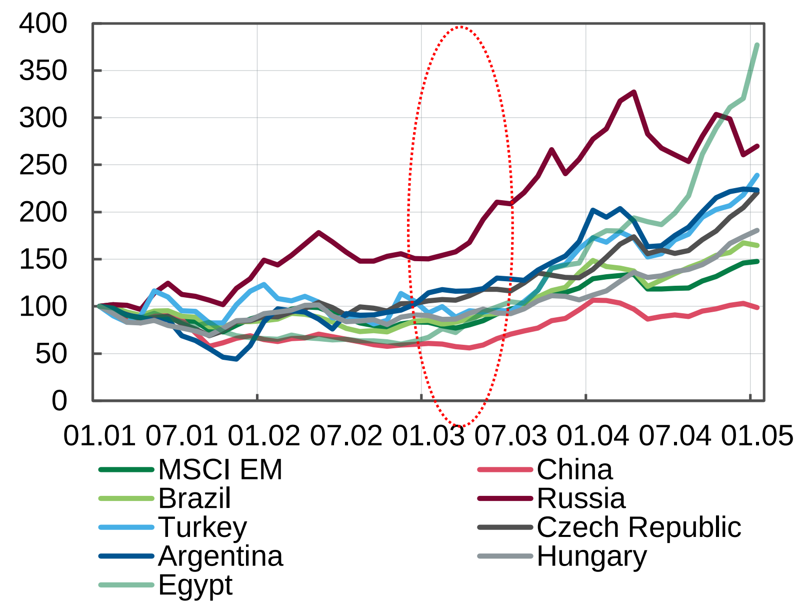
There are other significant risks:

- the continued cooling of the global economy and a further deterioration in terms of trade, including due to spreading of the coronavirus
- an escalation of the military conflict in eastern Ukraine and new trade restrictions introduced by Russia
- a drop in the harvest of grain, fruit and vegetable crops in Ukraine in the wake of unfavorable weather
- the higher volatility of global food prices, driven by global climate change
- a decrease in foreign capital inflows

Box. Risks to the global economy from the spread of coronavirus

- As previous pandemics have shown, global markets reaction is usually temporary
- Loss of world GDP from SARS virus in 2003 amounted to $40 bn or 0.1 pp of world GDP. Global markets quickly recovered
- The largest negative impact is expected to be on the Chinese economy, especially Q1. But likely rebound in the succeeding quarters, helped with the stimulating measures by the government and the PBC, will offset the previous effects
- Under such scenario all these will have a marginal effect on the Ukrainian economy

MSCI dynamics of selected EMs in 2001 – 2004, Jan 2001 = 100



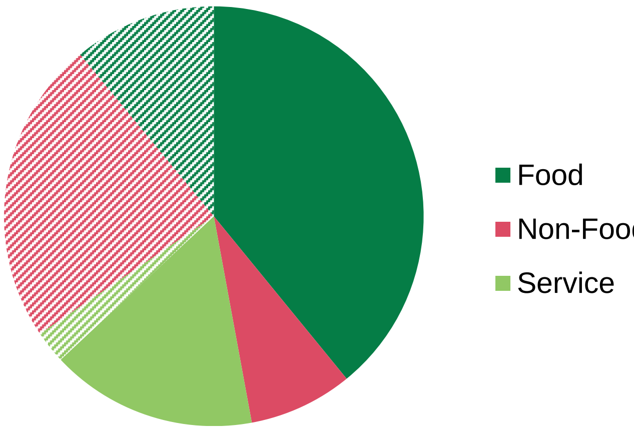
Source: Refinitiv Datastream, NBU staff estimates

- However, the risks of a more prolonged impact are there. In these case, terms of trade impact is likely to be neutral for Ukraine, but demand shock and financial market reaction will hit the country more seriously

Annexes

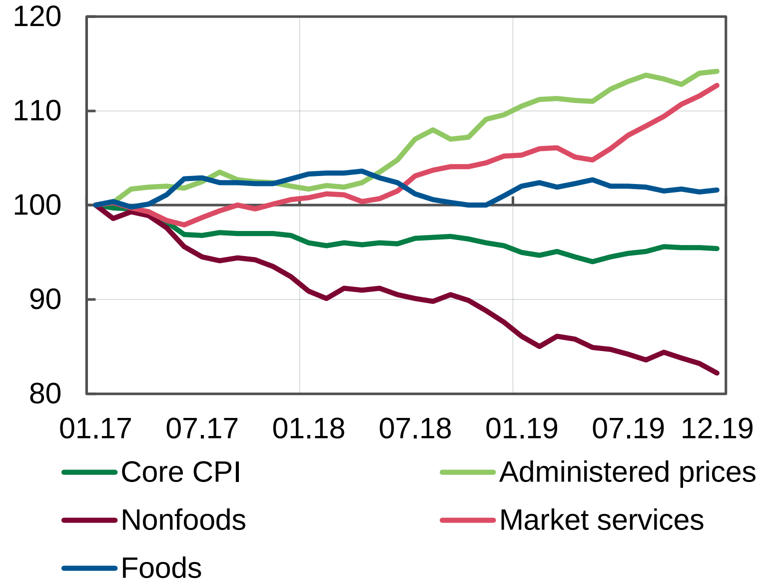
Hryvnia's appreciation contributed to a rapid slowdown in consumer inflation, despite pressure from consumer demand

The share of imported goods * in the structure of the CPI consumer basket for 9 months of 2019 **,%



* Shaded areas correspond to the share of imported goods and services.
** For foods and non-foods, SSSU data on commodity structure of retail trade turnover of enterprises and the SFS data on imports of selected goods for 9m of 2019 were used, and for services - data on input - output tables on share of imports in final consumer expenditures by types of economic activities in 2017.
Source: SSSU, SFS, NBU staff estimates.

CPI deflated inflation components , 01.2017=100

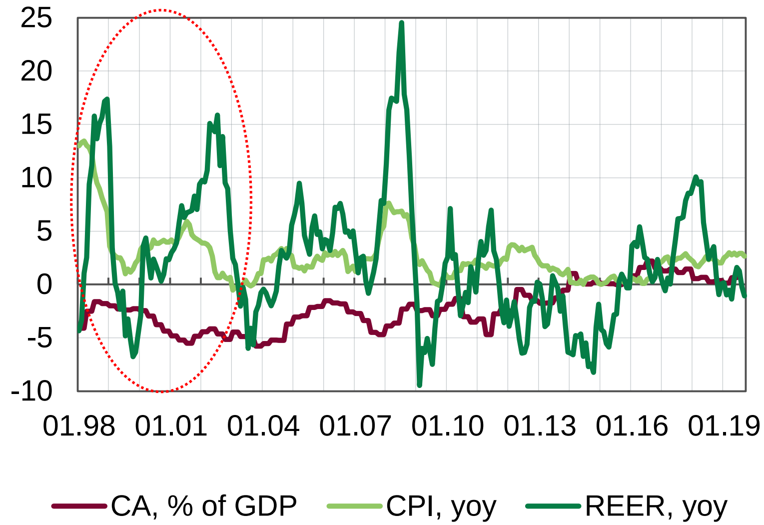


Source: SSSU, NBU staff estimates.

- Nonfood prices declined faster driven by significant appreciation of the hryvnia. Nonfoods are largely imported products or products with a large share of imported inputs. Fuel prices also declined due to both the strengthening of the hryvnia and an overall fall in global energy prices
- Nevertheless, hryvnia's appreciation had a lesser impact on food and service prices as they are primarily driven by internal factors

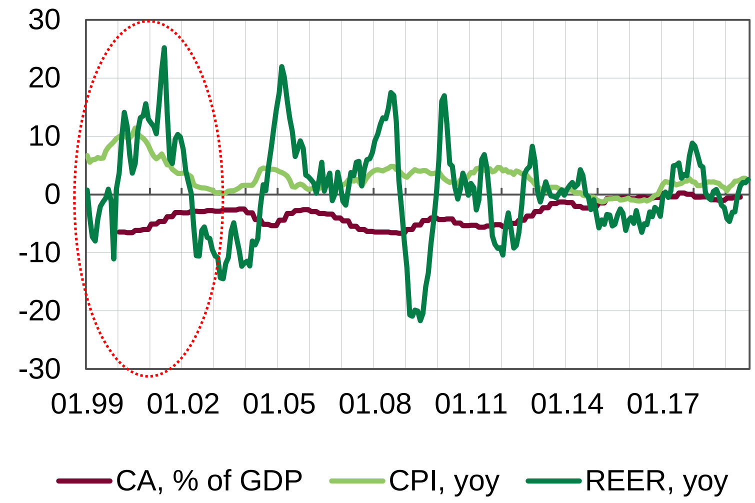
After the introduction of IT, some countries experienced episodes of strengthening REER, which, however, did not affect the expansion of CA

Czech Republic: REER, CPI and Current Account (12-m rolling)



Source: IFS IMF.

Poland: REER, CPI and Current Account (12-m rolling)

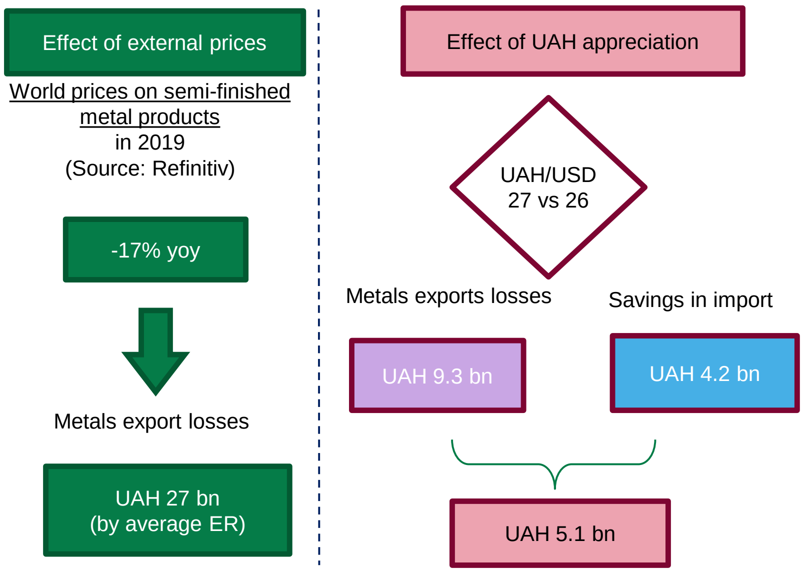


Source: IFS IMF.

- It is clear that it is necessary to take into account other factors that influenced these economies during these episodes, in particular, the pre- and post-crisis periods, structural reforms, etc.
- However, this confirms the idea that strengthening REER without affecting the expansion of the current account can hardly be called a unique phenomenon

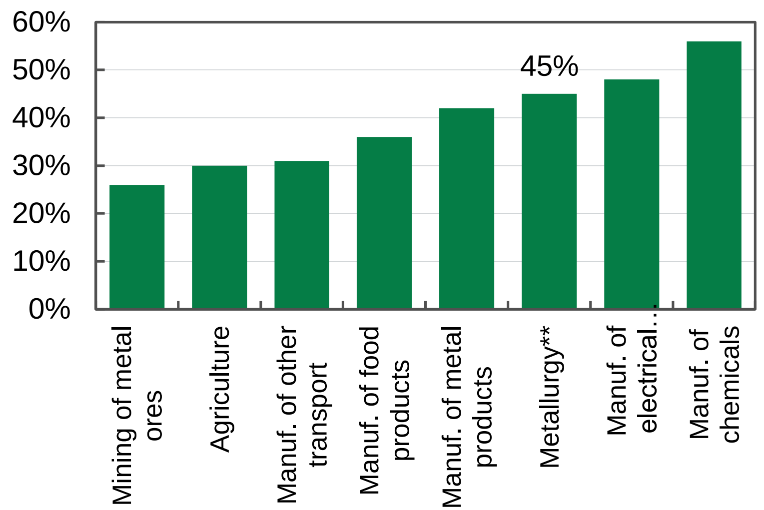
Impact of low external prices largely exceeded the effect of UAH appreciation for Ukrainian metals exporters

Metals Exports Losses



Source: NBU estimation

Import content of exports by selected types of economic activity in 2017 (incl. secondary effects), %

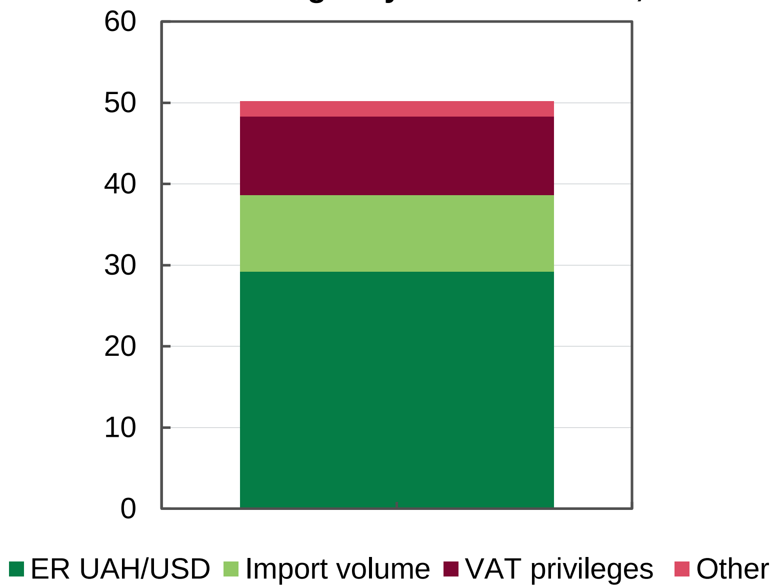


* Incl. manufacture of railway locomotives and rolling stock.
** Covers production of base ferrous and non ferrous metals.
Source: SSSU, NBU staff estimates.

- In 2019, worsening of external environment hit metallurgy production
- Hryvnia appreciation contributed to weaker performance but was not the primary reason
- Moreover, stronger currency allowed to reduce the cost of imports

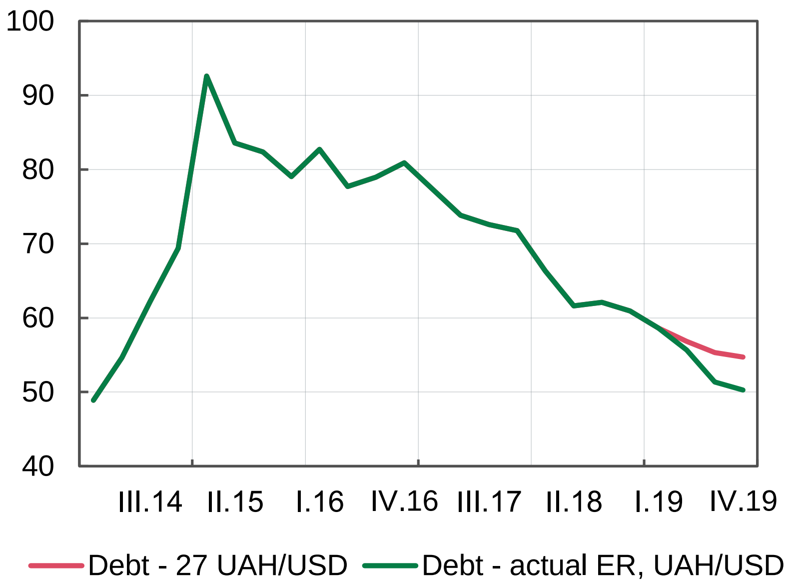
There were both losses and benefits for the fiscal accounts from stronger hryvnia

Underperformance in tax proceeds to the general fund of the state budget by factors in 2019, UAH bn



Source: Treasure, MFU, NBU staff estimates.

Public-and-publicly-guaranteed-debt-to-GDP ratio under different scenarios for UAH/USD rate



Source: MFU, SSSU, NBU staff estimates.

- Due to hryvnia appreciation budget plan for import taxes was under-fulfilled, but explained only near 50% of the under-execution of general fund tax revenues. The rest was attributed to a decrease in tobacco production, high VAT refunds and some other reasons
- At the same time, budget gained benefits on FX spending and improving investor's risk perception. Net budget losses from ER appreciation amounted UAH 23 bn or 2.3% of revenues
- ER appreciation contributed to a faster reduction in the debt-to-GDP ratio, improving investors' sentiments
- In 2020, the budget may face the similar to 2019 challenges

Administrative inflation will remain high due to tobacco & alcohol

	w, %	2019	2020	2021	2022
Admin CPI	*16.8*	**8.6 (11.7)**	**9.3 (10.0)**	**9.8**	**9.1**
Change of contribution to CPI	**-**	**-0.5 pp**	**-0.2 pp**	**-**	**-**
• *Natural gas*	*1.2*	-28.8 (-16)	14 (13)	6 (4)	6
• *Heating and hot water*	*1.0*	14.4 (14)	0 (11)	4	4
• *Cold water*	*0.2*	12.4 (12)	9	8	7
• *Electricity*	*0.9*	0	10 (0)	15 (25)	15
• *Alcohol*	*4.7*	5.2 (9)	5 (9)	8	8
• *Tobacco*	*3.6*	21.6 (22)	15 (13)	14 (13)	13
• *Transport*	*2.5*	9.1 (13.5)	8 (9)	8	6

Box. Quarterly Projection Model – the main forecasting tool

- Small open-economy New-Keynesian model
- Similar models are used by many other central banks
- Describes monetary policy transmission mechanism
  (IS curve, Phillips curve with expectations, UIP, Taylor-type policy rule)
- Model in “gaps” - measures trend variables and explains deviations
- Variables respond to shocks in the short run, but shocks dissipate in the long run

Main features:

- Building of coherent macroeconomic forecast in a structural way
- Policy simulations & alternative scenarios construction
- Assessment of the impact of various events on macro situation
- Explanation of recent economic history (estimation of equilibrium levels and estimation of deviation from this trends by components)

Working paper 3/2019 “Quarterly projection model for Ukraine”