CENTRAL BANK
OF THE REPUBLIC OF UZBEKISTAN

MONETARY POLICY GUIDELINES FOR 2022 AND 2023-2024

Tashkent – 2021

Central Bank of the Republic of Uzbekistan

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Contents

Abbreviations

GDP	–	Gross Domestic Product
CPI	–	Consumer Price Index
PPI	–	Producer Price Index
IT	–	Inflation Targeting regime
UFRD	–	Uzbekistan Fund for Reconstruction and Development
UN	–	United Nations
FAO	–	Food and Agricultural Organization
IMF	–	International Monetary Fund
IFC	–	International Financial Corporation
ADB	–	Asian Development Bank
IDB	–	Islamic Development Bank
EBRD	–	European Bank of Reconstruction and Development
WTO	–	World Trade Organization
VAT	–	Value-Added Tax
UST	–	Unified Social Tax
CB	–	Central Bank
M0	–	cash in circulation
M1	–	M0 + demand deposits in national currency
M2	–	M1 + time, saing and other deposits in national currecy + deposits in foreign currency
p.p.	–	percentage point

Introduction

The monetary policy **guidelines** reflect the work to be done in the monetary sector in 2022 and 2023-2024, the measures to be taken by the Central Bank in the event of changes in external and internal economic conditions, approaches and prospects for improvement in monetary policy.

This document was primarily developed based on the objectives of ensuring price and financial stability in the economy, reducing inflation **to 5%** by the end of 2023.

It should be noted that there is **still a high degree of uncertainty** about future changes in external and internal conditions. Therefore, the medium-term macroeconomic forecasts were designed according to expectations based on two different scenarios. So, the **baseline** and **alternative** scenarios of medium-term macroeconomic conditions have been explicated taking into account the scale and duration of the impact of external and internal factors on macroeconomic indicators.

The pandemic situation was considered an important factor in the scenarios, as the progress of the vaccination process in the world is one of the main factors determining the faster recovery of economic growth in developed countries, and relatively slow recovery in developing countries.

This year's calculations also took into account climate change and agricultural productivity, financial sustainability indicators and the expected reforms and their expected outcomes as important factors.

In the **baseline scenario** of macroeconomic development, the gradual improvement of external and internal economic conditions is expected, and sharp external risks are not forecasted. The pandemic situation will normalize and restrictions on human resource migration and cross-border movements will not be introduced. As the pace of economic activity increases, investment and consumer demand in all sectors will fully recover to pre-pandemic levels.

Under the baseline scenario, **domestic** and **foreign private investment** and **structural reforms** in various sectors of the economy are considered to be important drivers of economic growth.

The conditions of the **alternative scenario** of macroeconomic development are based on the possibility of unfavorable external conditions, tensions in international financial markets and declining economic activity in major trading partners due to the persistent pandemic situation in the world.

Under the conditions of this scenario, the level of external demand will decline in 2022, and a slowdown in domestic consumption and investment spending may occur.

Depending on the simultaneous occurrence of one or more of the risks considered in the forecasts, the duration of the economic difficulties and the negative impact on the national economy were assessed.

Terms in the baseline scenario create preconditions for maintaining the current **moderately tight** monetary policy conditions, while in the case of the alternative scenario, measures may be taken to **slightly ease** monetary conditions and **ensure a balance** between price stability and support for economic activity.

In the coming years, the Central Bank will focus on further improving the operating mechanism and developing the money market, as well as systematic work to implement the next phase of reforms in the domestic foreign exchange market, develop analytical and forecasting capacity and increase the efficiency of monetary policy transmission mechanism.

The task of increasing the efficiency of the transmission mechanism is related to the development of the financial market, in particular **the government securities market,** increasing the size of the **private capital market** and the development of non-bank **financial intermediation institutions** in the economy.

An issue that should be given special attention in the coming years is the elimination of long-term stable factors of inflation. This requires, first of all, measures to **develop competition** in the consumer market, increase the **production** of consumer goods, **reduce the concentration** of imports of basic foodstuffs, develop **trade and service infrastructure** in the regions.

Successful implementation of these structural reforms will allow for a gradual transition of monetary conditions to neutral conditions once inflation reaches the target level.

I. SCENARIOS OF MACROECONOMIC DEVELOPMENT IN 2022-2024

In the context of the global economic crisis caused by the coronavirus pandemic and the introduction of strict quarantine restrictions in the world economy in **2020**, there was a sharp decline in economic activity, limited cross-border connections and supply chain disruptions and a significant easing of monetary and fiscal policies.

In 2021, the relative improvement of the pandemic situation, the easing of quarantine measures, a significant recovery in economic activity due to the increase in the level of adaptation of economic entities to the pandemic, contributed to the pre-pandemic level of aggregate demand.

At the same time, the slower recovery of aggregate supply than demand against the background of the persistence of disruptions in the cross-border connections and the supply chain has led to an **acceleration of inflationary processes** around the world. The significant increase in the prices of basic foodstuffs from the last quarter of 2020 and **energy resources** from the beginning of 2021 has also led to the formation of inflation above the target in most countries.

As noted above, the development of medium-term macroeconomic forecasts was based on two different scenarios, as **high uncertainties** remain about future changes in external and internal conditions.

While developing the scenarios changes in external economic conditions, forecasts of international financial institutions on the world economy and prices for major exports, the expected situation in major trading partner countries, the expected trends in domestic economic conditions were taken into account.

Conditions	Factors and channels of impact	
	Baseline scenario	**Alternative scenario**
1. Pandemic situation	The situation will continue to stabilize, vaccination will continue, and new variants of the virus will not spread.	The likelihood of re-imposition of quarantine measures due to the spread of new variants of the virus will increase
2. External demand	Exports will grow as a result of increased demand in major trading partners amid recovery in external economic activity. World economy will grow according to the IMF baseline senario in 2022 and beyond.	Continued dificulties in logistics and mobility of people will have a negative impact on exports growth. In 2022, the global economy may decline again.
	The volume of remittances will have an increasing dynamics changing around the long-term trend.	In 2022, the dynamics of growth of cross-border remittances will not be observed, in 2023-2024 there will be a weak growth.
	Oil prices in 2022 will remain at a high level (external pressure on gasoline prices will remain steady).	Oil prices in 2022 will have a declining trend (in the domestic market this will have a decreasing impact on gasoline prices).
	Absense of sharp fluctuations in exchange rates of currencies of major trading partners. Formation of a relatively stable exchange rate will not experience strong pressure and will form within its fundamental trend.	Exchange rates of major trading partners may depreciate rapidly under the influence of an increase in external debt burden, a decrease in oil prices, and other negative factors. This, in turn, will lead to deviation of the real effective exchange rate from the long-term trend.
3. Gold price	The role of gold as a safe asset in 2022-2024 will gradually decline.	The role of gold as a safe asset will continue, it will show growing dynamics in 2022, and will decrease from 2023.
4. External financial conditions	In 2022-2024 FDI will gradually sifnificantly increase.	In 2022, there will be no increase in FDI, in 2023-2024 a slow recovery will begin.
	With the recovery of the global economy from the II quarter of 2022 developed countries will move to a phase of tightening monetary policy and interest rates in financial markets will gradually increase.	The current conditions of monetary policies of developed and developing countries will be maintained in 2022, the relative monetary policy tightening will be postponed until 2023-2024.
5. Climate change, crop yields	The food price index (FAO) will decline in 2022 and in 2023-2024 will form in close proximity to the long term trend. Supply chains of goods and logistics will be restored. The impact of climate change will be minimized and production will increase.	The food price index (FAO) will increase in 2022, and may slow down slightly in 2023-2024. Difficulties with transportation, logistics and labor resources will remain, the degree of adaptation will not change.
6. Internal conditions and aggregate demand	Fiscal consolidation will begin in 2022. In 2023-2024, the overall fiscal deficit will gradually decrease.	Fiscal stimulus will continue in 2022. The size of the overall fiscal deficit in 2022 could be at the level of 2020.
	In the first half of 2022, the output gap will close and in 2023 the economy will reach its potential level.	Recovery of real incomes in the economy will be delayed. Until the first half of 2023, a negative output gap will remain, economic growth will be lower than the potential level.
7. Financial stability	The growth of loans will be at the level of nominal GDP and the high level of loan repayment will be maintained.	The growth of loans will be at the level of nominal GDP growth, and the level of repayment may decrease compared to 2021.Bad debt (NPL) may rise.
8. Structural reforms	1) Full liberalization of regulated prices in 2022	Price liberalization will be delayed beyond 2023.
	2) Gradual liberalization in 2022-2023	
	Successful implementation of structural reforms in industry and agriculture. Foreign trade terms will be gradually adapted to international standards. The level of concentration of imports and monopolization of the economy will gradually decline. Competition will increase in all sectors of the domestic market. The ongoing structural reforms, having increased labor productivity and capital return on investment in the economy will increase the role of qualitative changes in ensuring economic growth in comparison with financial factors and capital flows.	Reforms will mainly continue in the healthcare sector, while the economy may slow down slightly. The degree of concentration in the economy and imports will increase, and as a result, domestic prices may be higher than in foreign markets.

1.1. The baseline scenario of macroeconomic development and monetary policy

According to the baseline scenario of macroeconomic development, the **pandemic situation** in the world and in our country will stabilize, and vaccination of the population against coronavirus will intensively continue. As the post-crisis recovery of the world economy progresses, in most countries the economy will reach its potential level. At the same time, the non-spread of new more dangerous variants of the virus and the gradual easing of quarantine measures were also accepted as the main conditions.

External economic conditions

Measures aimed at stimulating during the pandemic through **easing monetary conditions** and **fiscal policy** will have a positive impact on the sustainable growth of the global economy in the coming years. In most developed countries, large-scale infrastructure investments are expected to be accelerated to ensure economic growth. At the same time, the main focus will be on the development of a "green and digital economy" and the active implementation of projects aimed at expanding the production of renewable energy resources.

This year, due to the faster-than-expected recovery of economic activity, the IMF and the World Bank have revised the growth rate of the world economy and the economies of our major trading partners, at the same time growth for 2022 has slowed to some extent due to a higher base.

According to the International Monetary Fund, the world economy is expected to grow by **5.9 percent** in 2021, **4.9 percent** in 2022, and **3.5 percent** in 2023-2024 *(Figure 1).*

It is also expected that economic activity in main partner countries will recover rapidly, and the high growth rates of our trading partners, in turn, will have a positive impact on economic growth as a result of increasing external demand, especially for our exports.

Figure 1. International Monetary Fund forecasts for world economic growth

Figure 2. World Bank forecasts for world economic growth
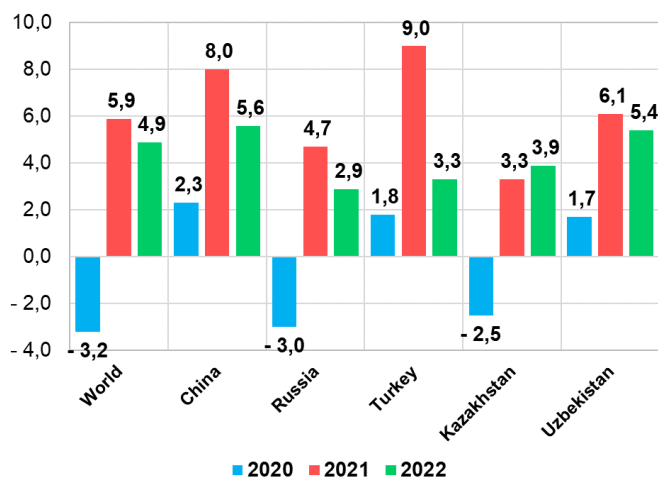
Манба: IMF, World Economic Outlook (October, 2021)
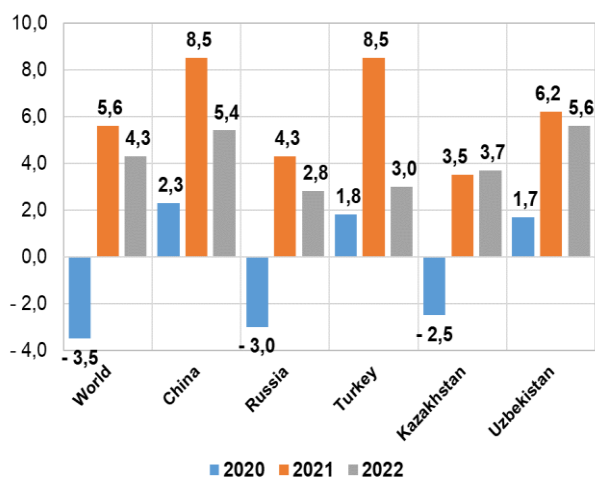
Манба: World Bank, Economic Outlook for Europe and Central Asia

At the same time, in the context of a sharp rise in prices for basic foodstuffs and energy resources the **current inflationary processes in most countries** are expected to be **temporary,** according to forecasts, by the end of the next year inflation in our main partner countries will fall to the target level as a result of monetary policy measures taken to reduce inflation.

In the medium term, the completion of the current tightening phase of monetary conditions in key developing countries will allow the transition to a neutral or stimulus phase and the achievement of high economic growth.

With economic activity recovering and high maintenance of oil prices, no significant changes in the exchange rates of our main trading partners' national currencies (except for the impact of changes in the dollar index) are expected in 2022.

This, in turn, reduces the likelihood of external pressure on the exchange rate of our national currency, the real effective exchange rate will be within its long-term trend.

Against the background of growing foreign demand, favorable formation of prices for our main export goods and fluctuations in the real effective exchange rate within the fundamental trend, the volume of **exports** (exluding gold) is predicted to grow by **20-25%** in 2022 and by **15-22%** in 2023-2024.

At the same time, exports of **non-ferrous metals and textile products** are expected to grow at a higher rate next year due to the positive

expectations on an increase of commodity prices. It is also expected that in the context of improving the situation with the pandemic, there will be a significant recovery and growth in **exports of services** (tourism services).

In turn, due to the active continuation of structural reforms in the economy, increasing the efficiency of investment projects and the acceleration of privatization processes, the **volume of imports** is expected to grow in line with the increase in domestic production in the medium term. According to forecasts, imports will rise by **10-12 percent** in 2022, by **13-17 percent** in 2023 and by 9-10 percent in 2024.

The high share of imports of machinery and equipment in the structure of imports, in turn, will be a key factor in production volume and long-term economic growth, and in the medium term raw material imports will increase.

As a result, **deficit of the current account** of the balance of payments will remain at **5-7 percent** of GDP. The expected increase in foreign direct investment and borrowed funds will be the main sources of financing this negative gap. At the same time, the volume of external borrowing is expected to decrease in proportion to the increase in investment from year to year.

At the same time, maintaining relatively tight monetary policy conditions and ensuring **stable real interest rates** in line with the decline in inflation in the economy will create the necessary fundamental conditions for a steady increase in domestic private and foreign investment in the economy.

The recovery and growth of foreign trade will largely depend on the improvement of cross-border connections, the easing of restrictions on mobility of people between countries, the resumption of air traffic, logistics and transport.

This year, in the context of **problems and disruptions in the transport and logistics system**, a sharp increase in transport costs was one of the main factors affecting export and import prices. The gradual elimination of these imbalances in the coming years will have a positive impact on prices.

The recovery of economic growth in key trading partners and the stability of the exchange rate of their national currencies, in turn, will serve to increase the **volume of cross-border remittances** to our country by **10-12%** per annum in 2022-2024. At the same time, the share of remittances from Russia and Kazakhstan in general is high, and the volume of remittances

largely depends on the formation of macroeconomic processes in these countries.

Table 1. Forecasts of macroeconomic development under the baseline scenario
(in percent)

Indicators	2020 (actual)	Forecasts under the Baseline scenario (annual change)			
		2021	**2022**	**2023**	**2024**
Inflation rate	**11.1%**	**9.8-9.9%**	**8-9%**	**5-6%**	**5%**
Real GDP growth	**1.7%**	**6.5-7.2%**	**5.5-6.5%**	**5-6%**	**6-6.5%**
Final consumption expenditures	**-0.5%**	**9-10%**	**6-6.5%**	**6.3-7.2%**	**5.2-5.7%**
- households	*-1.2%*	*10-12%*	*6-7%*	*6.1-7.2%*	*5.1-5.8%*
- public authorities	*2%*	*8-9%*	*5-6%*	*6.4-7.5%*	*4.4-5.1%*
Gross capital formation	**-8.2%**	**13-17%**	**6.3-8.4%**	**8.5-10.3%**	**9.4-11.2%**
- centralized	*-34.9%*	*30-40%*	*1-2.2%*	*8.4-10.2%*	*8-9%*
- decentralized	*2%*	*10-14%*	*9-11.3%*	*8-11%*	*9-11%*
o/w, FDI	*-32.7%*	*15-20%*	*50-60%*	*25-30%*	*10-15%*
Overall fiscal balance *(to GDP)*	**-4.4%**	**-(4.5-5.5)%**	**-(2.6-3.1)%**	**-2.5%**	**-2%**
Exports (excluding gold)	-25.6%	25-30%	20-25%	15-20%	17-22%
Imports	-12.8%	16-19%	8-10%	13-17%	9-10%
Loans to the economy (stock)	34.3%	18-20%	17-19%	15-17%	14-15%

Манба: Марказий банк

Global trade volumes are projected to grow steadily in 2022-2024, despite some disruptions in global aggregate supply this year.

While the annual growth of the FAO index, which represents food and agricultural prices, was **32.8%** in September 2021, the index is expected to

decline steadily in the coming years due to a resumption of food supply and increased agricultural productivity. At the same time, the impact of climate change on the productivity and prices of basic food products will be minimized in the long run due to the development of a "green economy".

Also, oil (Brent) price in 2022-2023 is expected to form an average of **65-80 dollars** per barrel. This, in turn, will continue to have an increasing effect on the price of fuel products in the domestic market.

At the same time, with recovery of global economic growth and the expected tightening of monetary conditions in advanced countries, financial markets are expected to see rising trends in asset prices. This will lead to a shift in capital investment from gold, which is considered a safe asset, to government securities and other financial instruments.

Therefore, the role of gold as a safe asset and consequently its price is expected to decrease to about **1,600-1,700 dollars** per troy ounce in 2022-2023.

Due to the recovery of the world economy and the current accelerated inflationary processes, the **tightening of monetary conditions** by developed countries ("taper tantrum"[1]) is likely to take place from the end of this year. In the condition of a reduction in the volume of quantitative easing and an increase in interest rates, the decline in inflation in the world economy will contribute to the formation of the target for the coming years.

Internal economic conditions

As a result of the rapid recovery of economic activity in our country, the **GDP gap** is projected to close **completely** in the first half of 2022 and the economy will reach its potential level in 2023 *(Figure 3).*

The rate of economic growth is projected to be around **5.5-6.5 percent** in 2022 and **6 percent** in 2023-2024 *(Figure 4).*

In the baseline scenario, the main drivers of economic growth are **private domestic and foreign investment** and **structural reforms** in various sectors of the economy.

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[1]**Taper tantrum –** the situation related to the reduction of Quantitative easing policies and the increase of interest rates, «taper» - reduction of asset purchases and «tantrum» - increase of interest rates. During the pandemic, most developed and some developing countries also used this tool to withdraw funds from the economy through asset purchases (government securities, corporate bonds, mortgage-backed securities, etc.), it is expected that this practice will be reduced and stopped as economic activity resumes.

At the same time, taking the measures of continuing the **privatization process**, completing the transformation of state-owned **enterprises and banks**, improving competition, agricultural reforms and **increasing productivity** in the economy *(increasing energy efficiency, introduction of solar and wind energy and water-saving technologies)* is the most important.

In the context of increased competition between countries to attract foreign investment after the pandemic, in order to receive **5-6 billion** dollars' foreign investments per year it is important to create conditions for **modern new areas of business** *(information technology, financial and logistics services, ecotourism)* and **effectively promote** them among foreign investors along with improving the traditional investment and business environment.

While **financial incentives from the budget** implemented in previous years will have **their inertial impact** in 2022-2023, in the coming periods, **private investment incentives** will serve to ensure real economic growth. At the same time, the **multiplier effect** and **efficiency** of private investment in **value creation** will be higher than that of financial incentives from the budget.

Figure 3. GDP gap forecast

Figure 4. Real GDP growth forecast
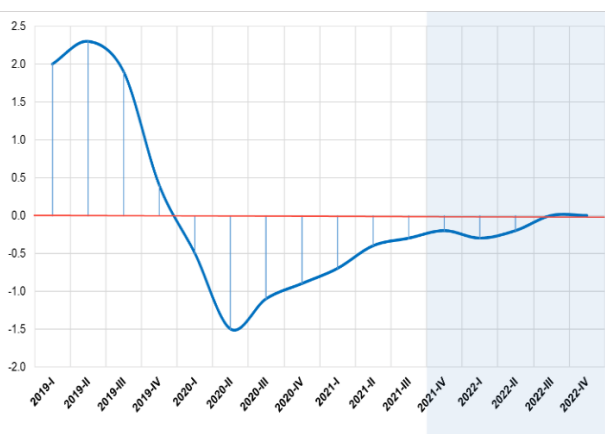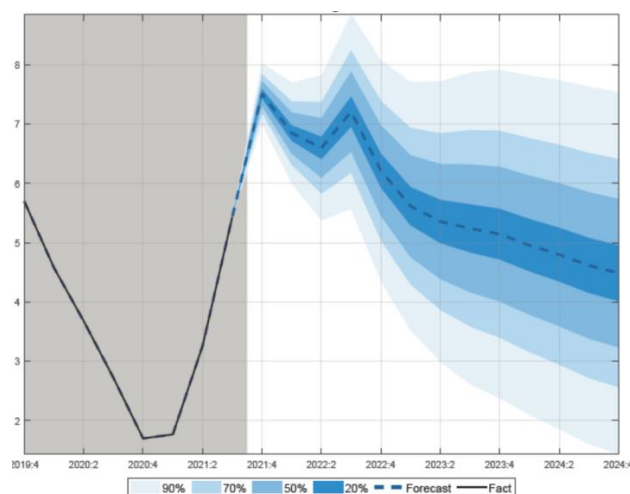

Source: Central bank forecasts

Under this scenario, real growth in **final consumption expenditure** is projected to be around **6-6.5 percent** in 2022 and around **5-7 percent** in 2023-2024, which will create a basis for the stable formation of aggregate demand in the economy.

In 2020-2021, during the pandemic, a large amount of fiscal stimulus was carried out to support the economy.

As a result, the ratio of the state budget deficit to GDP in 2020 was **4.4%,** and in 2021 this figure is expected to reach **4.5-5.5 percent**.

The task of ensuring macroeconomic stability in the country in the coming years requires the **beginning** of gradual **fiscal consolidation** from 2022, and the ratio of fiscal deficit to GDP is projected at **2-3%** in 2023-2024.

According to forecasts, the volume of investments in fixed assets will grow by **6.3-8.4%** in 2022, **8.5-10.3%** in 2023, and will accelerate to **9.4-11.2%** in 2024.

Transformation and **privatization** of state-owned enterprises and banks will be actively pursued. The share of the private sector in GDP will be gradually increased. Measures will also be taken to **develop the capital market** and reform the functioning of **financial markets**, which is necessary to ensure the efficient redistribution of financial resources in the economy.

The **liberalization of regulated prices** was postponed until after 2021 due to the pandemic.

Figure 5. Inflation forecast under the baseline scenario
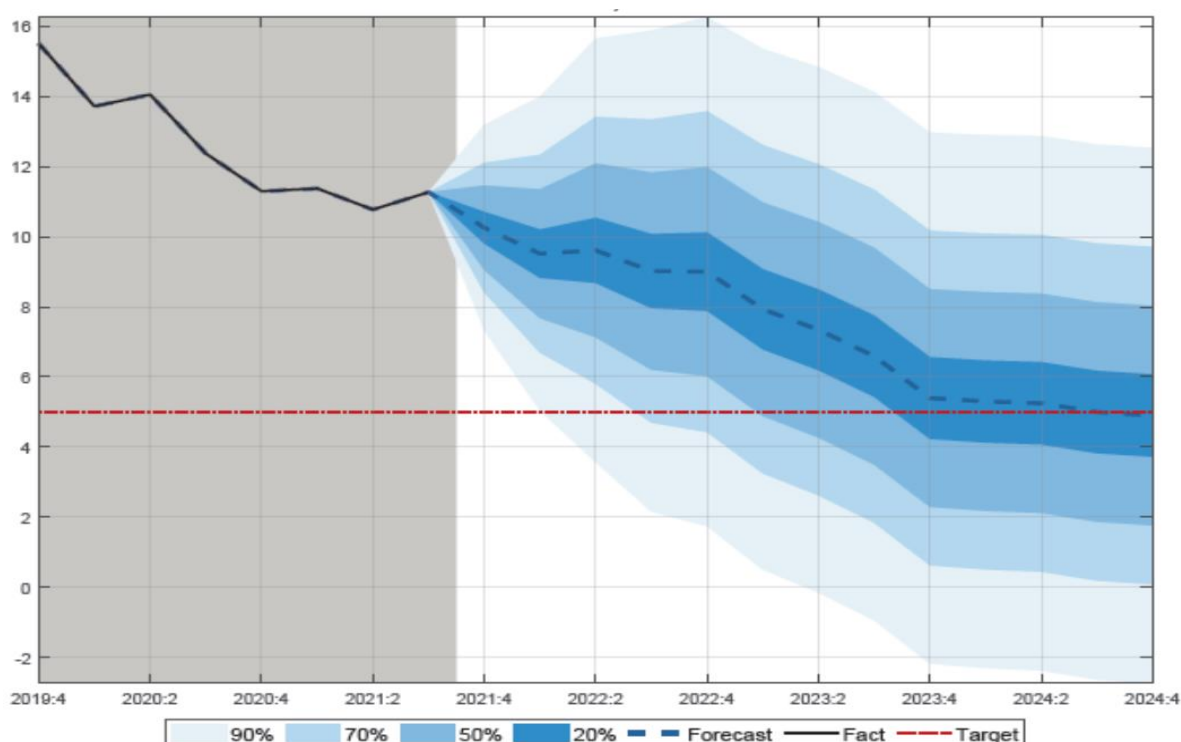
Source: Central Bank forecasts

According to the baseline scenario, the liberalization of regulated prices is one of the factors influencing the dynamics of inflation. Based on the level

of liberalization of regulated prices, the **inflation rate** is projected to amount to **8-9%** in 2022.

Inflation is projected to fall to the target level of **5%** in 2023-2024 with the impact of regulated prices declining from 2023 *(Figure 5).*

Monetary policy

The Central bank conducts monetary policy in order to ensure **price and financial stability** in the economy. In this case, the nature of the factors affecting the inflation rate is of particular importance.

In the first half of 2022, the economy will reach its potential, monetary conditions will remain "relatively tight", taking into account the liberalization of regulated prices and external inflationary risks.

In case of one-off liberalization of regulated prices, measures will be taken to form real interest rates in the money market at **2-3%,** and in case of gradual liberalization of regulated prices, measures will be taken to raise real interest rates in money markets to **4-5%.**

In this scenario, monetary operations are primarily focused on absorbing liquidity. The parameters of liquidity-absorbing operations (bonds and deposit operations) may be **revised to be increased**.

In addition, in the coming years, the stock growth of credits in the economy will remain **proportional to the growth of nominal GDP**, and the ratio of the stock of credits to GDP will be around **45-50%.** The volume of extended loans will increase during the year and the growth of their stock will be stable due to the high level of repayment of previously issued loans (within 60-70%).

The effects of regulated price liberalization are **temporary** and will not lead to significant changes in real interest rates in the economy, and measures will be taken for anchoring inflation expectations by providing comprehensive explanations to the public through **monetary policy communication**.

Box 1

Dynamics of prices for the main export goods of Uzbekistan in the world market and expectations for the future

Gold market

While the price of gold increased from **1,200-1,400** to **2,000 dollars** per troy ounce in the period from 2018 to August 2020, there was a slight decline in prices from August 2020 to March 2021 in the context of restrictive measures which led to a decrease in global demand, primarily from manufacturers of gold products, as well as the formation of sufficient gold reserves by many central banks.

Figure 1. Gold price flactuations
(U.S. dollars per 1 troy ounce)

Figure 2. Changes in the Brent oil price
(US dollars per barrel)

Source: Gold Price and Markets Insider (businessinsider.com)

From mid-2021 to the present, the precious metal has been in a relatively stable zone, with no significant fluctuations in prices. The oscillation range is from **1,730** to **1,800 dollars**.

The gold market in 2022 is associated with many interrelated factors. In 2020-2021, ultra-soft monetary policies of the US Federal Reserve, the ECB and other central banks have led to a decline in real interest rates around the world.

At the same time, becoming more profitable and attractive investment object than other financial assets with less confidence, gold experienced price increse. However, if we look at the first half of 2021, the expected high interest rates have had the opposite effect on the dynamics of gold prices.

In the period from September 2020 to September 2021, prices for precious metals fell by an average of **6.6%.**

Economists estimate that global commodity prices and the epidemiological situation in the world will remain sharp as factors influencing the maintenance of high prices in the near future.

Oil market

In 2021, there was an upward trend in world oil prices. The price of Brent crude oil increased by **55%** in the period from the beginning of this year to September (from 51 to 79 dollars per barrel) *(Figure 2).* The main drivers of oil prices are:

- the existence of energy problems and a global shortage of natural gas in China, which is the largest importer of oil;

- a sharp decline in global reserves in the United States due to the disruption of production in the Gulf of Mexico as a result of the storms on the East Coast of the US in August this year;

- growing demand for oil. According to updated data from OPEC and the International Energy Agency in early September this year, demand for oil will exceed 100 million barrels per day by the second quarter of 2022;

- cold winter is expected in the northern hemisphere. According to global analysts from the Bank of America, the demand for oil will grow even stronger in the next 18 months (oil prices may rise to 100 dollars per barrel);

- the decline in gas reserves in Europe (reserves have fallen to their lowest level in a decade) is expected to increase the cost of electricity production (the rise in energy prices in Europe is directly reflected in oil prices).

OPEC and the International Energy Agency opine the oil market will not return to pre-pandemic consumption levels by the end of this year.

The U.S. Department of Energy estimates that the average price of Brent oil in 2022 will be around **66** doll./bar.

Natural gas

There have been significant changes in the natural gas market recently. The price of natural gas at the Henry Hub port, which corresponds to 1 million British thermal units (BTU), has **doubled** since the beginning of 2021 (from 2.6 to 5.8 dollars per 1 million BTU).

The decline in natural gas supplies around the world is leading to a sharp rise in prices. Global efforts to limit carbon emissions have led to increased demand for natural gas and renewable energy sources.

Rising demand for natural gas in Europe, Asia and Latin America has helped U.S. exports grow at a faster pace this year, pushing future contract prices of the U.S. natural gas to their highest level since February 2014.

In addition, the weakness of wind energy in Europe, the low supply of natural gas before the winter, will lead to an increase in natural gas and electricity prices on the continent.

1.2. Alternative scenario of macroeconomic development and monetary policy

According to the alternative scenario of macroeconomic development, the emergence of new more dangerous variants of coronavirus in the world will aggravate the pandemic situation, the **decline in economic activity** after the introduction of strict quarantine measures, slowdown in the recovery of **aggregate supply** and remaining long-term global **inflation** at a high level.

The aggravation of the pandemic situation may also be due to the slow continuation of coronavirus vaccination measures in developing countries, dramatic difference in vaccination rates across countries and (or) the ineffectiveness of existing vaccines against new coronavirus strains.

As a result, if the **decline in external demand** has a negative impact on the country's exports, **global high inflation** is likely to increase the pressure on domestic inflation through imports of goods and raw materials.

The external financial situation will be the same as in 2020, and interest rates will remain **low** under the influence of large-scale financial incentives. The volatility of the global financial situation, the growing interest of investors to precious metals as a safe asset, will also have a direct impact on foreign investment, the growth dynamics of which may not be observed.

Under this scenario, certain difficulties in attracting short-term liquidity in the financial markets may arise, further increase in external debt in most countries and the cost of servicing it may put additional pressure on the domestic foreign exchange market.

External economic conditions

The persistence of the above-mentioned **uncertainties** in this scenario, in turn, creates **difficulties** in making macroeconomic decisions:

on the one hand, against the background of a sharp rise in prices for basic foodstuffs, raw materials and energy resources, the current inflationary processes require the tightening of monetary and fiscal policies;

on the other hand, the assumed severe pandemic situation requires the promotion of stimulus policies.

According to the alternative scenario, the **current** monetary policy conditions in developed countries will remain the same in 2022, and tightening decisions will be postponed to 2023-2024. However, the level of

uncertainty about the impact of monetary policy measures on the stability of the financial system and inflation remains high.

In 2020- the first half of 2021, in the complex conditions caused by the pandemic, many developed and developing countries have taken **fiscal stimulus** measures in order to increase economic activity, social support and expand the capacity of the health care system. At the same time, high fiscal deficit indicators have led to a significant increase in the **external debt** of developing countries.

As a result, in the context of worsening pandemic situation expected in 2022 under the alternative scenario, on the one hand, the **opportunities for fiscal support** of the economy are somewhat **limited**, external borrowing and overall fiscal deficit levels are expected to be lower than in 2020.

On the other hand, developing countries are beginning to face difficulties in repaying their debts and the number of requests for debt review is increasing. This, in turn, reduces the ability of international financial institutions to support the global economy.

At the same time, there are expectations that the volume of fiscal stimulus for states will decrease due to the fact that the pandemic situation is expected to worsen in 2022, and its impact may last longer than in 2020.

Meanwhile, the slowdown in global economic growth due to the pandemic situation in 2022 will be less significant than in 2020.

In particular, according to the International Monetary Fund's **alternative scenario**, the world economy is expected to grow by **3.4%** in 2022, by **2.5%** in 2023 and by **2.8%** in 2024. At the same time, economic growth in **developed countries** is expected to be 4.1% in 2022, 1-1.5% in 2023-2024, while economic growth in **developing countries** is expected to be around 4.7% in 2022 and 4% in 2023-2024.

Globally, the deficit in aggregate supply will not be completely eliminated in 2022, and there will be no growth in world trade (depending on the level of development of the pandemic, foreign trade and aggregate supply may also decrease).

In 2022, due to the relative decline in economic activity and the corresponding derease in demand, there is a possibility of a slight decline in prices for raw materials and energy resources in the world market, but in 2023-2024 the prices of these goods will gradually increase. In particular,

under this scenario, the price of Brent oil will fall to **40-50 dollars** per barrel in 2022, and the dynamics of growth will be recovered in 2023-2024 and projected to reach **70-80 dollars** per barrel.

In the context of the slowdown in global economic activity and falling energy prices, economic growth in our major trading partners is projected to be **1-2 percentage points** lower than in the baseline scenario. This, in turn, will have a significant impact on the volume of foreign trade and cross-border remittances of our country.

Also, in 2022, the role of gold as a safe asset will start to increase again and its price may oscilliate around **1,750-1,850 dollars** per troy ounce. In 2023-2024, as a result of the recovery of economic activity, the investment value of gold can decline again and go down to **1,550-1,650 dollars** per troy ounce.

Under the influence of increasing external debt burden, falling oil prices and other factors, the **exchange rates of national currencies** of major trading partners will **depreciate** to some extent in 2022, which in turn may increase the exchange rate of our national currency with certain lags.

Based on the above expectations, the volume of exports in 2022 will remain at the level of 2021 - **without significant changes**, but the share of gold in exports will increase.

On condition of the recovery of external demand the growth of exports is projected at **10-12 percent** in 2023-2024.

A slight slowdown in production processes and a decline in consumer demand will lead to a decrease in imports by **3-5 percent** in 2022. In 2023, imports is expected to recover and the growth rate is expected to be **12-15 percent**, and **14-16 percent** in 2024.

Under the influence of the above factors, **deficit of the current account** of the balance of payments will remain at the level of **4-6 percent** to GDP. In 2022, external borrowing (or the use of international reserves) will be a source of funding for this negative gap. However, there are also high uncertainties in the formation of the prices of these loans.

In this scenario, with the increase in private investment from 2023, the volume of borrowing is expected to decrease.

Table 2. Forecasts under the alternative scenario of macroeconomic development *(in percent)*

Indicators	Forecasts under the alternative scenario *(annual change)*		
	2022	**2023**	**2024**
Inflation rate	**7.5-8.5%**	**5.6-6.6%**	**6-6.5%**
Real GDP growth	**3-4%**	**4.8-5.8%**	**5.5-6.5%**
Final consumption expenditures	**4.2-5.4%**	**6-6.8%**	**5-6%**
- households	*3.2-4.8%*	*5.8-7%*	*5.5-6%*
- public authorities	*5.1-7.3%*	*5.4-6%*	*5.2-6%*
Gross capital formation	**-(2-3)%**	**5-8%**	**9.4-11%**
- centralized	*-(4-8)%*	*-(2)-(+2%)*	*5-6.6%*
- decentralized	*-(3-5)%*	*6.5-8.4%*	*10-13%*
o/w, FDI	*-(1-2)%*	*15-20%*	*25-30%*
Overall fiscal balance *(to GDP)*	**-(4-5)%**	**-(3-4)%**	**-(2-2.5)%**
Exports (excluding gold)	1-3%	10-12%	10-12%
Imports	-(3-5)%	12-15%	14-16%
Loans to the economy (stock)	13-16%	16-18%	14-16%

Source: Central Bank Forecasts.

Additionally, as a result of declining economic activity in the countries of the main partners, the volume of cross-border remittances in 2022 will **not grow** as under the baseline scenario (may decrease due to the devaluation of

the national currencies of major partners) and in 2023-2024 the annual growth rates will recover and amount to **8-10 percent**.

Also, due to the pandemic situation, the rise in prices for **basic food products** in the coming year may remain high above its trend.

At the same time, global climatic conditions and the level of productivity in agricultural products are also important factors. From 2023, food prices are expected to stabilize again as a result of elimination of transport and logistics disruptions and an increase in aggregate supply.

Internal economic conditions

If all the expectations given above under the alternative scenario are **met simultaneously**, real GDP growth in 2022 may be around **3-4 percent**. At the same time, non-fulfillment of some of the conditions of the alternative scenario will result in relatively high real growth rates.

With the transition to a normal phase, economic activity and aggregate demand will recover from 2023, and real economic growth is projected at **4.8-5.8%** in 2023 and **5.5-6.5%** in 2024 *(Figure 7)*.

Figure 6. Forecast of GDP gap under the alternative scenario
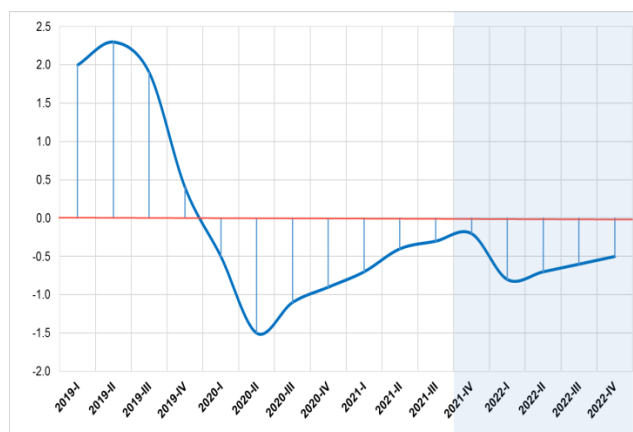
Figure 7. Forecast of real GDP growth under the alternative scenario
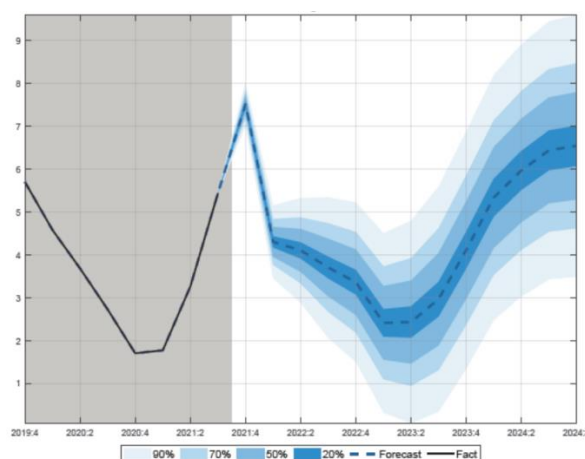
Source: Central Bank Forecasts

The **negative GDP gap** will expand to **1-1.5 percent** by 2022, and economic growth will be below its potential level. From 2023, there will be a shrinking of the GDP gap, and its closure (reaching the potential level of economic growth) will depend on the level of recovery of economic and investment activity.

Under this scenario, in 2022 fiscal stimulus will continue to support domestic economic activity, and the ratio of total fiscal deficit to GDP will be around **4-5,5 percent**. From 2023, fiscal consolidation will begin to ensure macroeconomic stability, and the ratio of fiscal deficit to GDP will be around **3-4 percent** in 2023 and **2-2.5** percent in 2024.

In the event of an alternative scenario, **consumer demand** growth in 2022 could be lower by up to **2 percentage points** than in the baseline scenario. In particular, the real growth in final consumption expenditure is projected to amount to **4.2-5.4 percent** in 2022, **6-6.8 percent** in 2023, and **5-6.4 percent** in 2024.

The volume of investment demand will also decline, and the volume of investments in fixed assets will possibly decrease by **2-3 percent** in 2022, and it is projected to recover to **5-8 percent** in 2023 and accelerate to **9.4-11 percent** in 2024.

In the context of declining foreign investment activity and an increase in capital investment in relatively safe assets, in 2022 the volume of foreign investment in our country may remain unchanged at the current level. From 2023, the inflow of foreign direct investment is expected to increase and annual growth rate will reach **15-20%** in 2023-2024.

Also, in 2022, spending on social support will continue. The process of implementing structural reforms in some sectors of the economy may slow down slightly. However, in the context of economic recovery, measures to reform the economy from 2023 will be actively pursued and will be a key factor in medium-term high economic growth.

Under this scenario, measures to liberalize the market of administratively regulated goods and services may be postponed **until after 2023**.

Although a slight decline in aggregate demand in 2022 will have a downward effect on inflation, disruptions in aggregate supply, fiscal stimulus measures and external factors may put upward pressure on inflation. Taking this into account, the inflation rate is projected to be **7.5-8.5 percent** next year, and **5.6-6.6 percent** by the end of 2023 *(Figure 8).*

Figure 8. Inflation forecast according to the alternative scenario
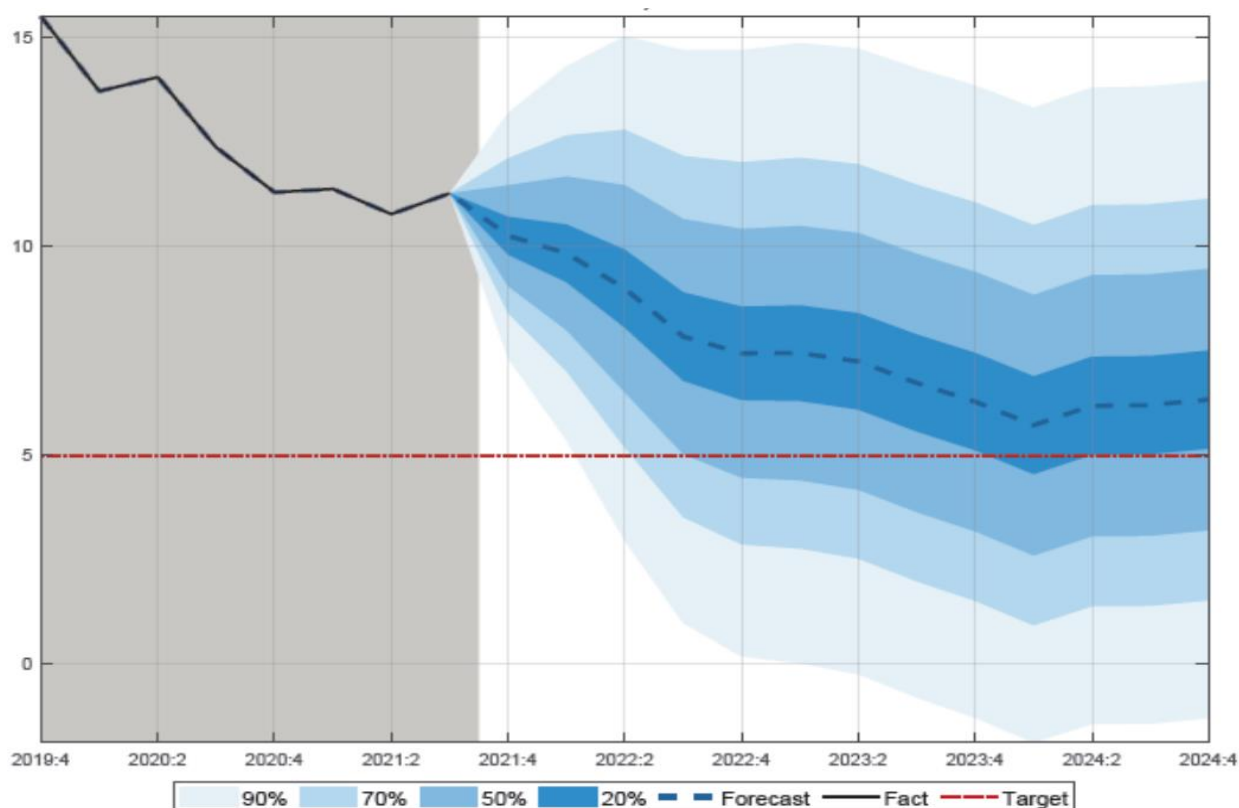
Source: Central Bank Forecasts

Monetary policy

Under the alternative scenario, the Central Bank will maintain **"relatively tight"** monetary conditions in 2022 to ensure a balance between price stability and economic activity in the economy. The Central Bank will cut the key rate in line with the slowdown in inflation.

In 2023, depending on the level of inflation and macroeconomic conditions, monetary conditions may be revised towards **"tightening".** If in 2022 the interest rates in the money market are formed around **2-2.5 percent** in real terms, then in 2023 the real interest rates are expected to increase to **3-4 percent.**

In order to ensure the continuity of the payment system, the use of short-term liquidity operations (REPO and SWAP operations) will be increased. The **parameters** for the volume of operations will be **kept unchanged.**

One of the important factors in the monetary policy decisions in 2024 is the process of liberalization of regulated prices.

At the same time, based on the level and timing of price increases for these goods and services, as well as the nature of its impact on inflation, decisions on the key rate will be made based on the need to tighten monetary conditions.

In the context of the pandemic, along with the decline in demand for loans, negative changes in credit discipline may occur, and in this scenario, the growth of the balance of credit investments in the economy will slow down slightly in 2022.

Provided that economic activity recovers, the annual growth rate of loan investments will amount to **16-18%** in 2023 and **14-16%** in 2024 and will be proportional to the growth rate of nominal GDP. As a result, in the medium term the ratio of credit investments to GDP will be formed in the range of **40-45%** and will serve to reduce the impact of monetary factors on inflation.

Box 2

Analysis of international financial markets and monetary policy of foreign central banks

The Central bank constantly studies the dynamics of inflation in foreign countries, foreign **debt securities** (government bonds) and **capital** markets, the **exchange rate of national currencies**, the prices for gold, oil and natural gas[2], which are the main export commodities. At the same time, an analysis of the current and expected conditions of monetary policy, as well as measures of foreign central banks is carried out, the results of which are used in the development of medium-term macroeconomic forecasts.

Inflationary processes in the world. Rising global inflation in 2021 and related risks continue to put pressure on financial markets, especially the debt market and the stock market.

Prices increased primarily due to raising global demand for basic foodstuffs such as vegetable oils, wheat, sugar, and then in the context of a sharp rise in energy prices.

After elimination of pandemic restrictions by the countries with large economies, energy prices rose sharply in 2021 as producers struggled to keep up with fast-growing demand. In particular, natural gas prices in Europe have increased several times over the year. Oil prices have also risen as consumer demand for oil and coal has increased more than for gas.

The skyrocketing energy prices has been a key factor in pushing inflation beyond its long-term highs in developed economies, forcing central banks to rethink their stimulating monetary policies. Energy shortages have led to disruptions in manufacturing in China, negatively affecting the growth of the world's second-largest economy and threatening the supply chains of major technology companies.

In the last weeks of the third quarter of this year, there has been a downward trend in global markets as investors expect monetary policy to tighten amid inflationary pressures and supply chain disruptions around the world, including in the world's largest economy, the United States.

In 2021, government bond yields have increased in most countries of the world. Investors and central banks focused on the dynamics of 10-year debt securities of the United States, Germany, the United Kingdom and Japan, which are the main economies to be guided by when making decisions and developing forecasts regarding changes in external financial conditions.

In 2021, the yield on U.S. Treasury bonds increased sharply compared to 2020, which means that investors began to demand more income returns due to the risk of lending to the government, which reflects their expectations on the state of the economy. This is primarily due to high inflation in the world economy in 2021, supply disruptions, energy problems and shortages of goods and raw materials.

Rising yields also mean tighter monetary policy and **quantitative easing (QE) programs** in the world's advanced economies are likely to end sooner, especially in the US, which attracts the world's main focus.

In December 2020, the Federal Reserve System announced that it would spend **at least 120 billion dollars a month** (80 billion dollars of Treasury bonds and 40 billion dollars of mortgage-backed securities) until significant progress is made.

According to recent statistics in September annual inflation in the United States reached the highest rate since 1991 at **4.3%.**

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[2] See Box 4 for a detailed data regarding price trends for our major export commodities in the world market.

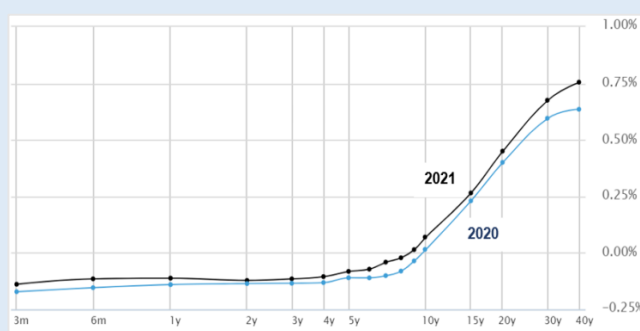**Figure 1. Yield curve of 10-year US Treasury bonds**

Source: *10 Year U.S. Treasury Note Overview | MarketWatch*

**Figure 2. Yield curve of 10-year German bonds**

Source: *10 Year Germany Government Bond Overview | MarketWatch*

Until recently, inflation was expected to return to its target of **2%** by the end of 2021. However, according to the latest Fed reports, inflation is likely to remain high in 2022 as the shortage of goods and labor needed for business continues.

For this reason, the Fed announced at its last meeting that a **slowdown in the quantitative easing program could yield results by 2022.** The acquisition of assets by the Federal Reserve create the basis for the continuous operation of the market and favorable financial conditions, while ensuring a continuous flow of loans to households and businesses.

Figure 3. Yield curve on 10-year Japanese bonds

Source: *Japan 10 Year Government Bond Overview | MarketWatch*

Figure 4. Yield curve on 10-year British Treasury bond
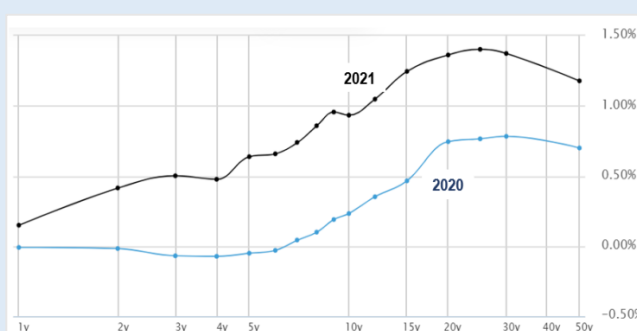
Source: *U.K. 10 Year Gilt Overview | MarketWatch*

Central banks of European countries

At its last meeting in September this year, the ECB (European Central Bank) continued to consider the current inflation rate as **temporary** and maintained a soft monetary policy. However, according to the results of the meeting, it was decided to reduce the rate of repurchase of assets only for the purpose of "fine-tuning", and it was noted that the purchase of assets will continue at least until the beginning of April 2022.

Due to high uncertainty in financial markets during the pandemic, the central banks of Croatia, Hungary, Poland, Romania, Serbia and Turkey have launched programs of purchasing government bonds in local currency, in Hungary programs of private sector bond purchase (APPS) have also been launched. The limited scope and duration of these programs *(Figure 5)* (with the exception of Hungary and Poland, asset purchase programs continue in these countries) were used to mitigate financial market dysfunction, liquidity provision, and restoration of monetary policy transmission mechanisms.

Figure 5. Volume of asset purchases by central banks of European countries, FRS and European Central Bank *(share of GDP in 2020, March 2020 - August 2021)*
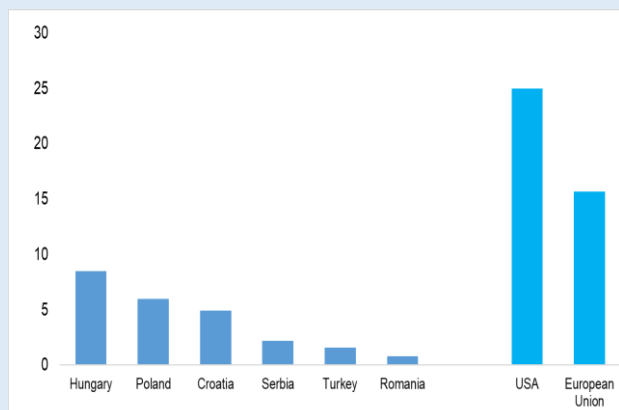
Source: International Monetary Fund

Figure 4. Changes in the Central Bank's key rate in some countries in 2020 *(in percentage points)*
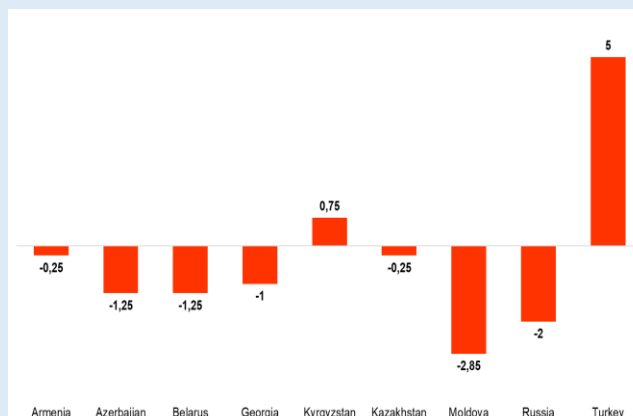
Source: Official website of the central banks of related countries

This distinguishes these programs from the "quantitative easing" program applied by the central banks of developed countries, in which the policy of keeping interest rates near the lower limit is aimed at providing additional stimulus to the economy.

Bank of Russia

Despite the raise of the key rate (by 25 and 50 basis points, respectively) to **5%** in March and April, the increase in prices in Russia exceeded 6% per annum for the first time since 2016 at the end of May. In order to reduce the risks of inflation increase and ensure its return to the target, the Bank of Russia has entered the stage of normalization of monetary policy and began to raise the key rate.

Due to difficulties in production and supply chains, labour shortages along with rising real wages, as well as structural changes in the labour market as a result of ongoing restrictive pandemic measures, inflation continued to accelerate as worldwide, reaching **7.4%** in September. In this context, the regulator raised the key rate to **7.5 percent** at its October meeting. However, should the situation develop in line with the baseline forecast, the Bank of Russia has not ruled out the possibility of further increases in the key rate at subsequent meetings.

The monetary policy and inflation rates of the major trading partner countries

Countries	Inflation target	Inflation (September)	Central Bank's key rate										
			I	II	III	IV	V	VI	VII	VIII	IX	X	10-months change
Russia	4	7,4	4,25	4,25	4,50	5,00	5,00	5,50	6,50	6,50	6,75	7,50	3,25
Kazakhstan	4-6	8,9	9,00	9,00	9,00	9,00	9,00	9,00	9,25	9,25	9,50	9,75	0,75
Kyrgyzstan	5-7	13,5	5,00	5,50	5,50	6,50	6,50	6,50	7,50	7,50	7,50	7,50	2,50
Turkey	5±2	19,58	17,00	17,00	19,00	19,00	19,00	19,00	19,00	19,00	18,00	16,00	-1,00
Ukraine	5±1	11	6,00	6,00	6,50	7,50	7,50	7,50	8,00	8,00	8,50	8,50	2,50
Armenia	4±1.5	8,9	5,25	5,50	5,50	5,50	6,00	6,50	6,50	7,00	7,25	7,25	2,00
Georgia	3	12,3	8,00	8,00	8,50	9,50	9,50	9,50	10,00	10,00	10,00	10,00	2,00
Belarus	5	10,2	7,75	7,75	7,75	8,50	8,50	8,50	9,50	9,50	9,50	9,50	1,75

Source: The official website of the central banks of these countries.

Acceleration of external inflation and the work of the central banks of major trading partners to stabilize prices are of great importance for Uzbekistan. In the first 10 months of 2021, the Russian central bank increased interest rate by **3.25 percentage points**, the central banks of Kyrgyzstan and Ukraine raised by **2.5 percentage points**, Georgia and Armenia by **2 percentage points** and Belarus by **1.75 percentage points**; other countries have also taken steps to tighten monetary conditions.

It should be noted that the forthcoming tightening of monetary policy by the US Federal Reserve will directly strengthen the dollar. The **dollar index** is expected to rise sharply amid reports that the key rate could rise even faster.

The termination of stimulating measures by central banks of large economies in the short term will lead to an increase in world interest rates. This, in turn, may lead to an increase in the cost of borrowing in foreign markets for the economy of Uzbekistan, a decrease in the price of gold, a certain decline in exports and budget revenues.

## II. ANALYSIS OF ECONOMIC CONDITIONS AND MONETARY POLICY IN 2021

2.1. Economic development trends in 2021

Measures taken to mitigate the effects of the pandemic and support the economy by the third quarter of 2021 have allowed to bring economic activity, production growth rates in most sectors of the economy to pre-pandemic levels.
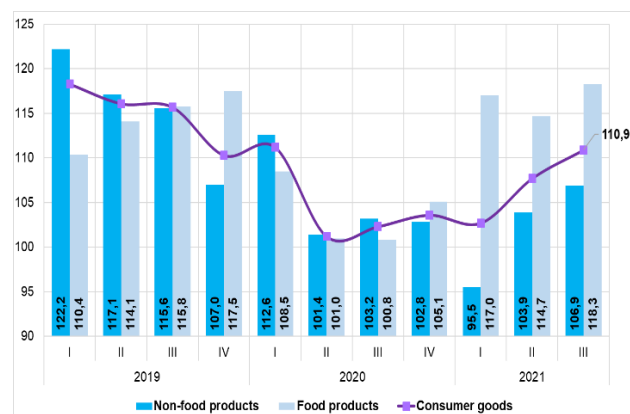
In particular, according to the State Statistics Committee, for 9 months of this year the real GDP growth accounted to **6.9 percent** *(Figure 9).*

Figure 9. Real GDP growth and its components
(compared to the corresponding period of the previous year, in cumulative percentage)
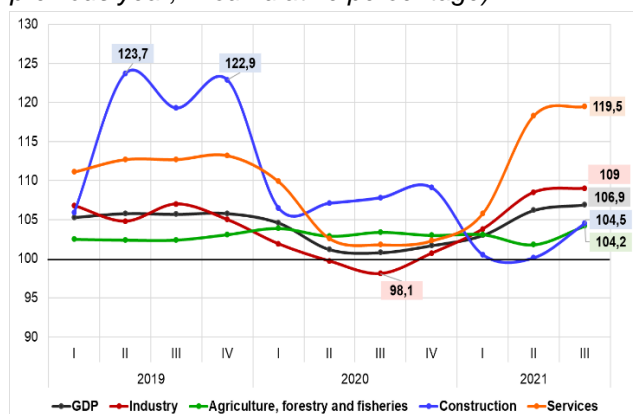
Figure 10. Change in volumes of consumer goods production

Манба: *State Statistics Committee*

As a result of absence of strict quarantine measures, the acceleration of vaccination processes, the full resumption of activities of the population and business entities adapting to the pandemic this year the real growth of the services sector amounted to **19.5 percent**, the real growth of the industry was **9 percent**, and it was **4.5 percent** and **4.2 percent** in the sectors of construction and agriculture respectively.

The volume of consumer goods production in January-September 2021 increased by **10.9%,** while food production and non-food production rose by **18.3%** and by **6.9%** respectively *(Figure 10).*

This year, the **total fiscal deficit** is projected to be higher than last year, and to amount to **5-5.5 percent** of GDP by the end of the year. According to estimates, by the end of 2021, GDP growth is expected to be around **6.5-7 percent**.

Retail turnover, which reflects the state of consumer demand, grew by **9.8%** in real terms during 9 months of 2021. In January-September 2020, this figure dropped to **-0.2%** *(Figure 11).*

The financial incentives during the year, the recovery of economic processes in the private sector, the growth of cross-border remittances, the stabilization of the situation in major trading partners were the main factors in the recovery of **consumer demand** in the economy.

In particular, the volume of **cross-border remittances** in the first 9 months of 2021 amounted to **5.7 billion dollars** having increased by **34.2%** compared to the corresponding period of 2020 (4.3 billion dollars) and by **29%** compared to the corresponding period of 2019 (4.5 billion dollars) *(Figure 12).*
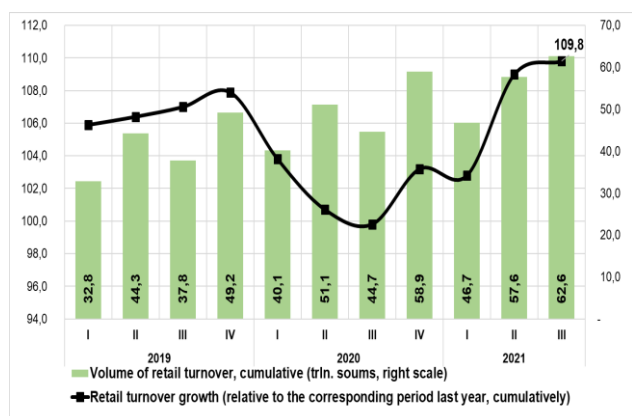
Figure 11. Volume if retail turnover   **Figure 12. Cross-border remittances**

Source: State Statistics Committee
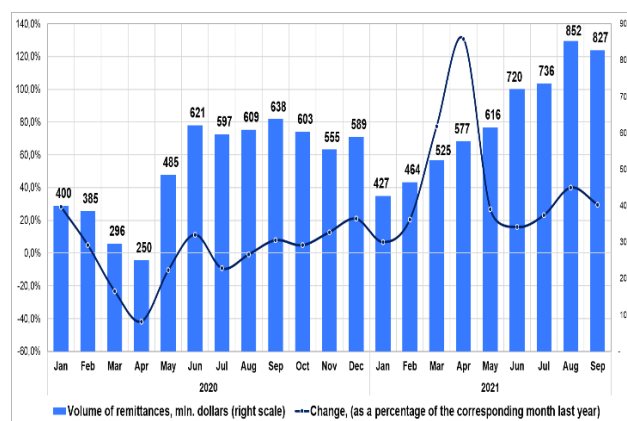
Source: Central Bank

These funds serve to stimulate investment activity along with the consumer demand of the population.

Positive trends are also observed in the growth rate of investment demand in the economy. In the first 9 months of this year, real growth in **fixed capital investment** amounted to **5 percent** *(Figure 13).*

At the same time, the fact that during this period the volume of investments at the expense of enterprises increased by **10%** compared to last year, and investments at the expense of the population raised by **11%** indicates the growing investment activity and confidence in the private sector.

Figure 13. Real change in fixed capital investment
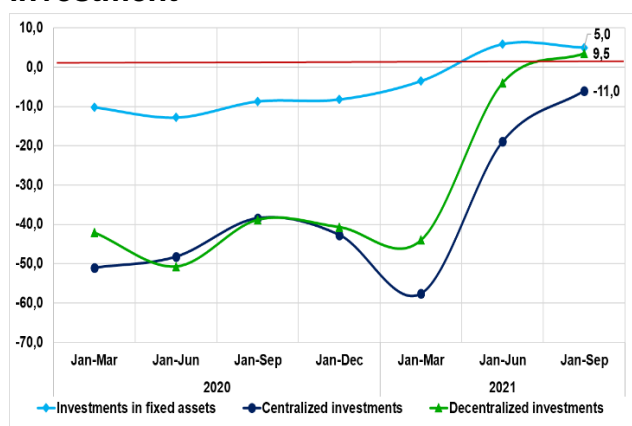
Figure 14. Loans extended to the economy

Source: State Statistics Committee
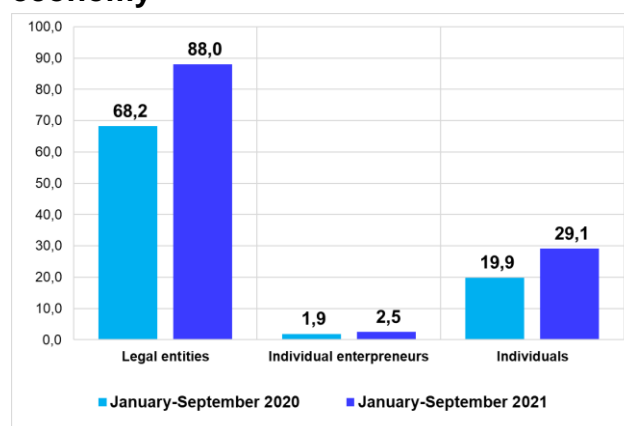
Source: Central Bank

During this period, a total of **119.5 trillion** soums of loans, which is **33%** more than in the same period last year, were allocated to the economy. In particular, 25.4 trillion soums *(22.7% more compared to the same period last year)* were allocated to enterprises to replenish working capital, while loans for investment purposes amounted to 65.2 trillion soums *(35% more than in the same period last year)*. In addition, loans to the population amounted to **29 trillion** soums increasing by **46%** compared to the corresponding period last year.

In the context of accelerating economic activity and the full recovery of production processes in key economic sectors, in January-September this year the volume of **imports** amounted to **17.9 billion** dollars having increased by **18.7%** compared to the same period last year and reached pre-pandemic levels.

By the end of the year, the growth rate of imports is expected to remain and increase by **12-15%** compared to last year.

Exports (excluding gold) in the first 9 months of 2021 amounted to **8.9 billion dollars** and rose **by 34 percent** compared to the same period last year. By the end of the year, an increase of this figure is expected to be around **25-30 percent.**

2.2. Analysis of monetary conditions

In order to support the balance between the tasks of mitigating the impact of the pandemic on the economy, supporting economic activity and ensuring price stability in 2020 the Central Bank decreased the key rate from 16% to 14% and monetary conditions were slightly eased and entered into a **relatively tight** phase.

In 2021, these conditions have been kept unchanged, and real interest rates on deposits in the money market, based on the **general liquidity situation** in the banking system, have been formed at an average level of **2-3%**. Only in May-July of this year there was a significant decrease in these interest rates due to a sharp increase in total liquidity.

However, this became temporary, and due to the necessary changes in monetary policy instruments, from August interest rates returned to the level provided for in **relatively tight conditions**.

Also, nominal interest rates for time deposits of individuals in the national currency, calculated with indexation to their **inflation expectations**, are also formed at a positive level of **2-3%** *(Figure 15)*.

Figure 15. Dynamics of real interest rates on money market deposits and time deposits of individuals

Legend:
- Real interest rates in money market
- Real interest rates on time deposits of individuals in national currency (inf. expectations)
- Real interest rates on time deposits of individuals in national currency (inflation)
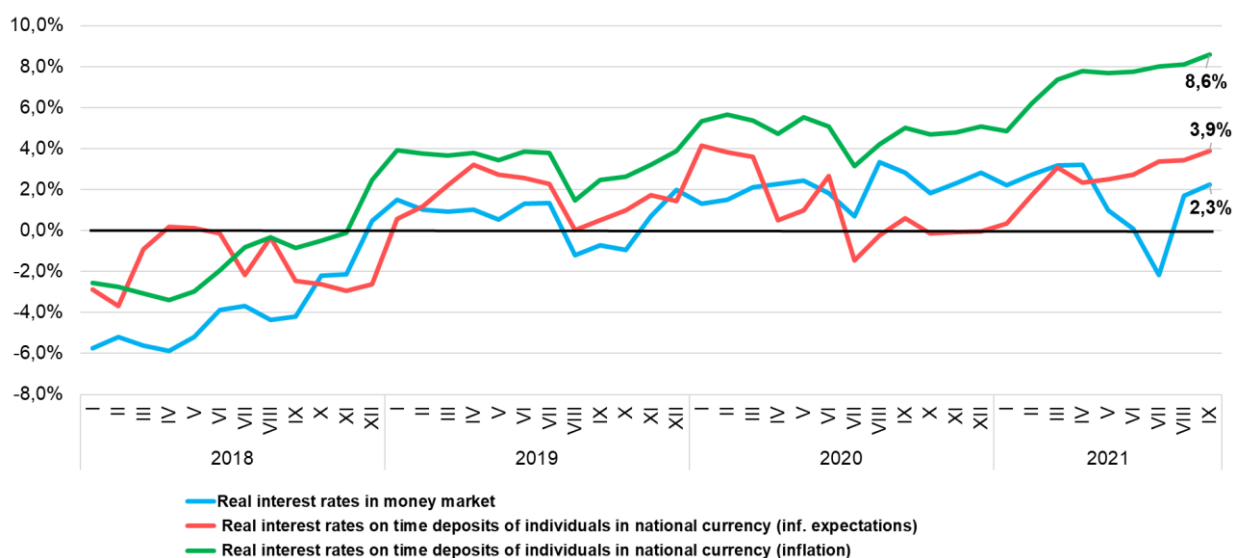
While in the second half of 2020 there was a decrease in interest rates on deposits in the national currency due to the temporary **preferable interest rate policy**, from the beginning of the year the positive level of real interest rates was restored due to the abolition of this mechanism and increased competition in the banking system.

Interest rates on time deposits of individuals indexed to the inflation rate grew from a positive real rate of **5-6 percent** at the beginning of this year to **8.6 percent** during the year.

Ensuring **positive** real interest rates on time deposits help **balance the aggregate supply and demand** and the redistribution of financial resources through banks in post-pandemic period due to **increased savings.**

Figure 16. Dynamics of interest rates on loans in national currency
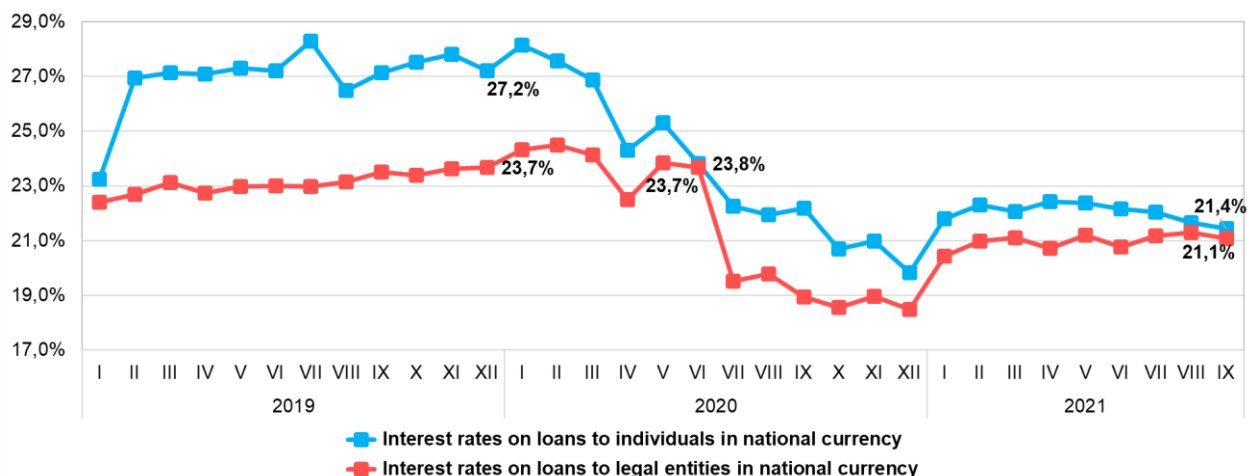
Also in the average interest rates on loans the dynamics of decline in the second half of 2020 changed to growing trend from the beginning of 2021, forming around **21-22 percent** without significant fluctuations during almost the whole period. In turn, the formation of interest rates on loans includes the cost of funds - interest on deposits, the premium for risk imposed by banks on the client, the expectations of banks and other operating costs *(Figure 16)*.

Generally, the monetary conditions formed in 2021 had a stabilizing effect on inflation.

Figure 17. Inflation rate and its forecast
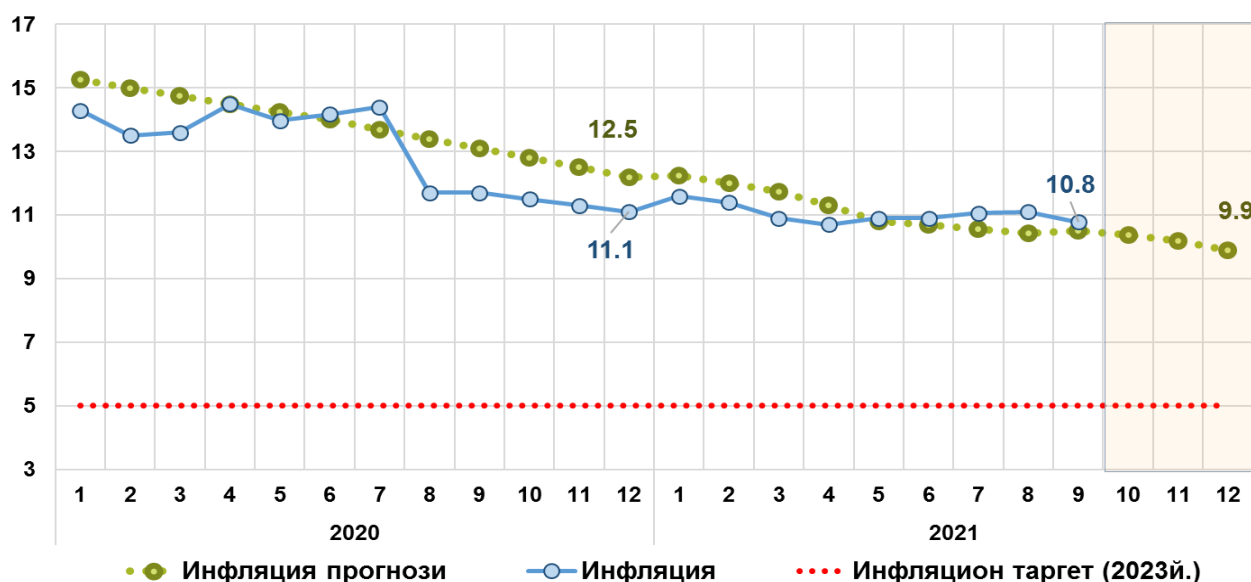
At the same time, the annual inflation rate had been **declining** since the beginning of the year due to the gradual reversal of the effects of last year's pandemic, however since May as a result of the next wave of coronavirus and

rising prices for basic food and energy resources in world markets it began to represent **an increasing trend**.

Since September, the annual inflation had a declining trend, reaching **10.8%** per annum. By the end of 2021, the inflation rate is expected to fall to **9.9%** due to the high base effect of last year, measures taken to replenish markets with basic food products and the maintenance of current monetary conditions *(Figure 17)*.

2.3. Monetary instruments and changes in the domestic foreign exchange market

In 2021, improvement of the **operational mechanism** and **monetary policy instruments** of the Central Bank and bringing them in line with the standards of the inflation targeting regime was profoundly activated.

In particular, since the beginning of the year, the Central Bank and the Ministry of Finance have announced the practice of pre-announcing the **quarterly schedule** of bonds, and now commercial banks can predict the volume, term and type of government securities and take them into account in liquidity management.

There were also changes in the **timing of monetary transactions**, in particular, the conduction of auctions at the beginning of the day and overnight transactions **during the day** (from 10:00a.m. until 16:00p.m.) has been implemented. At the same time, the openness of overnight operations during the day balanced the liquidity expectations of banks and had a positive impact on money market interest rates.

In this regard, the practice of calculating interest rates on overnight operations **on a calendar day**, rather than a working day, was introduced. Before, the interest rate on overnight operations conducted on Friday or the day before the holiday (used for 3-4 days) was calculated only for one day, which differed from the situation in the money market. This had a certain effect on the operation of the money market, creating an **arbitrage situation**. With this change, the interest calculation processes for the Central Bank's short-term monetary operations and deposit operations in the money market were unified.

Based on the forecast of the overall liquidity of the banking system, **fine-tuning** operations were introduced from 2 to 13 days, providing for a certain number of **REPO, SWAP operations and deposit auctions** during the mandatory reserve calculation period (usually during the last 10 days), depending on the status of commercial banks' compliance with the averaging ratio.

However, in the past period of 2021, there was a significant increase in total liquidity in the banking system, and **there was not need for these operations** due to the regular complience of the averaging ratio. On the contrary, in May-July, due to a significant increase in total liquidity, the

demand for Central Bank's liquidity absorbing operations increased. As a result, this situation required adjustments to the **volume of deposit auctions** and the **schedule of issuance of bonds of the Central Bank**.

With the beginning of the decline in interest rates in the money market in May, the limits on the balance of the Central Bank's bonds were increased from **5 trillion** soums to **7.5 trillion** soums and the volume of two-week deposit auctions was raised from **100 billion** soums to **200 billion** soums. In June, in response to the continued increase in total liquidity and downward trend in the market interest rates, the limit on the Central Bank's bonds was raised to **10 trillion** soums and the volume of two-week deposit auctions amounted to **500 billion** soums *(Figure 18)*.

Figure 18. Dynamics of the balance of the Central Bank's short-term monetary operations *(average daily balance for the month, billion soums)*
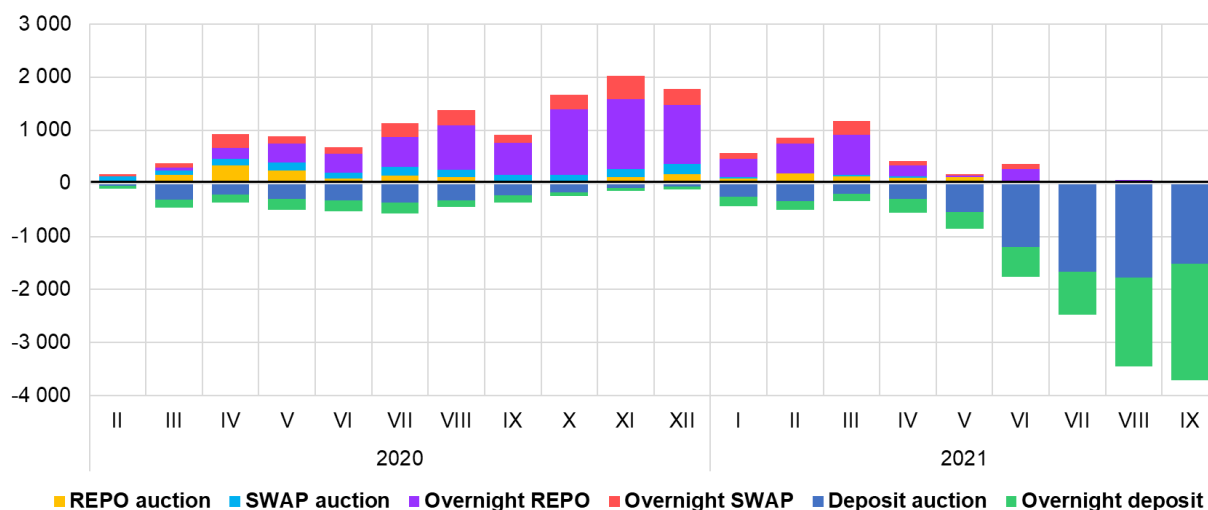
Source: Central Bank

Also, based on the continuation of the impact of government operations on overall liquidity in the third quarter, the dynamics of interest rates in the money market and the forecast of total liquidity of the banking system for the coming months, in September the limit of the Central Bank's bonds balance reached **15 trillion** soums and the limit on the volume of deposit auctions was increased to **4 trillion** soums.

Since August this year, a number of changes have been implemented in the **operational mechanism** of the Central Bank. In particular, a significant increase in budget expenditures in May-July to support economic activity led to an increase in the overall liquidity of the banking system and had a significant impact on the level of interest rates in the interbank money market.

Figure 19. Volume of transactions in the interbank money market (billion soums) and interest rates
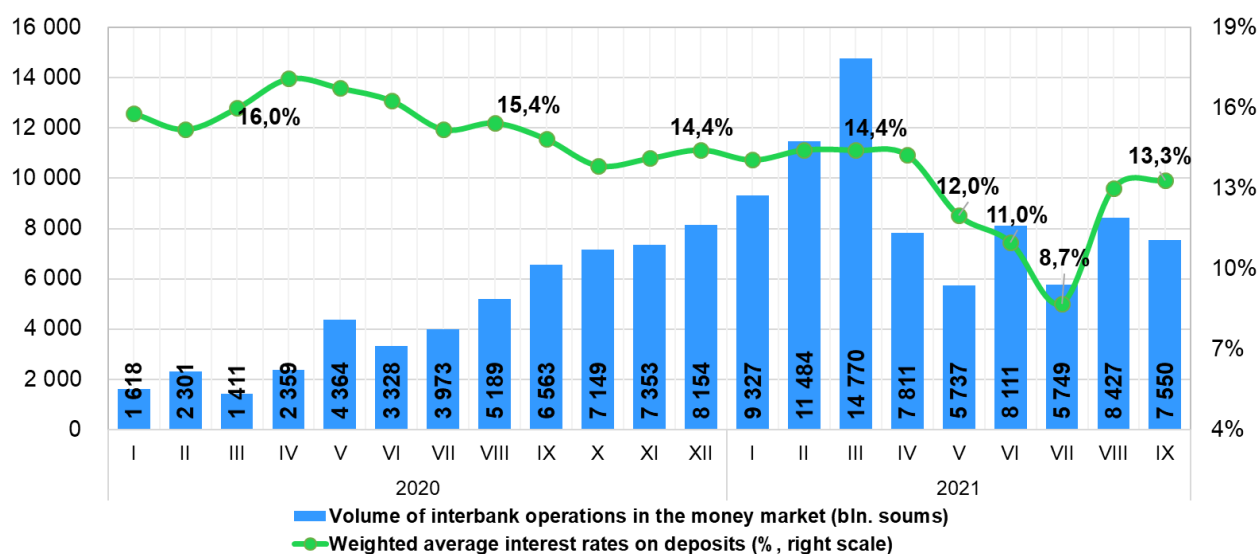
Source: Central Bank

In July, there was an increase in the structural liquidity surplus in the banking system and a significant easing of conditions in the interbank money market, followed by a decrease of weighted average interest rates **to 8.7 percent**, while from **August** due to the necessary changes in the operating mechanism there was an increase of interest rates up **to 13 percent**, interest and a return to the interest rate corridor *(Figure 19)*.

In order to increase the effectiveness of the Central Bank's interest rate corridor, this situation required the **complete abolition of limits** and **permanent implementation** of overnight deposit operations and the appropriate changes in monetary policy instruments.

In particular, the Central Bank's interest rate corridor has been expanded to **± 2 percentage points**, and in condition of the current **14%** key rate, overnight REPO and SWAP operations are carried out at **16%** (the key rate + 2%) and overnight deposit operations are carried out at **12%** (key rate - 2%).

The expansion of the interest rate corridor is explained by the **low activity of banks in the money market** (low number of participating banks and the volume of daily operations) and, as a result, insufficient efficiency of redistribution of total liquidity between banks.

In the Central bank's previous interest rate corridor (the key rate ± 1%), the interest of banks in trading on the money market was low and amounted to **2%** with a difference of **1%** for each bank entering into a contract.

In international practice, in countries with relatively high key rates, the interest rate corridor is wider, and the interest rate corridor narrows with the stabilization of inflation and the decrease in the key rate.

The introduction of a **wider interest rate corridor** is aimed at increasing banks' interest in money market operations (4 p.p. gap) and thus ensuring their active participation in the money market and reducing demand for the Central Bank's monetary operations.

In particular, **since August 5** (the first day of the next mandatory reserve period) there has been an raise in activity in the money market due to the expanded interest rate corridor, the total volume of deposit operations in August amounted to **8.4 trillion** soums and increased **by 46.6%** compared to July.

From the first day (August 5), when the Central Bank conducted an unlimited number of overnight deposit operations in accordance with the standards of the inflation targeting regime, money market interest rates returned to **the interest rate corridor** and **no fluctuations up or down the interest rate corridor have been observed** *(Figure 20).*

In August this year, some changes were implemented to the mandatory reserve requirements, **keeping** the Central Bank's reserve requirement **unchanged at 4%** for **national currency deposits** and increasing from 14% to **18% for foreign currency deposits**.

Figure 20. Money market indices UZONIA and UZWIA
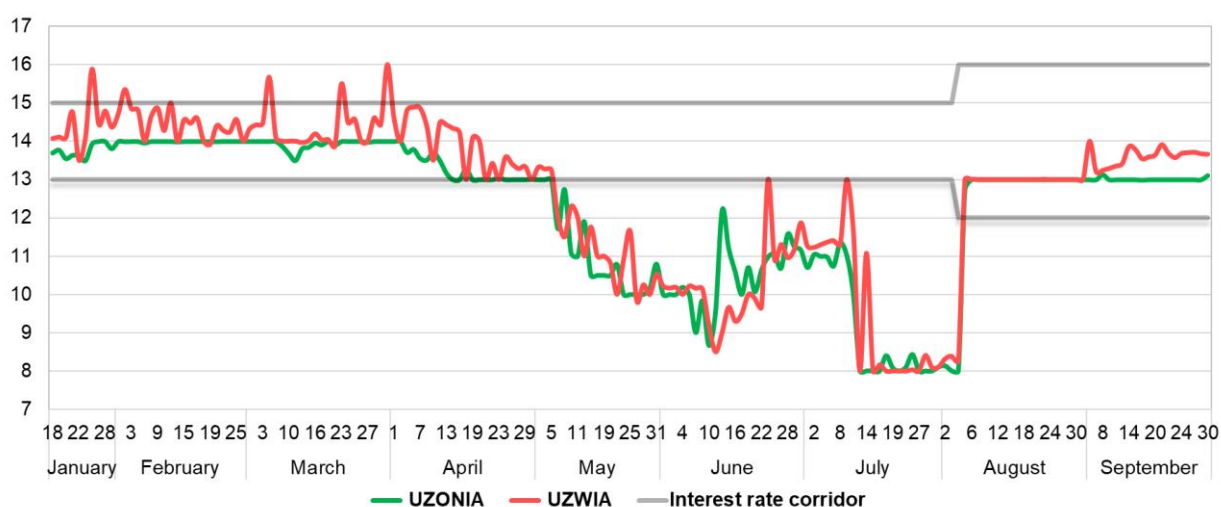
Source: Central Bank

The increase in mandatory reserve requirements for foreign currency deposits will, on the one hand, reduce the **dollarization of deposits** in the

economy to some extent, and on the other hand, will serve as a **one-off liquidity management tool** in the face of rising overall liquidity.

At the same time, the **averaging ratio** of commercial banks in relation to the amount of required reserves in the Central Bank was raised **from 0.75 to 0.8**, which minimizes the pressure of ammendments in the reserve ratio on foreign currency deposits.

Also, the raise in the averaging ratio, on the one hand, increases the flexibility of banks in liquidity management, on the other hand, has a positive impact on banks' compliance with strict prudential standards by rising the amount of funds to be kept in the correspondent account.

In order to effectively implement the inflation targeting regime, the monetary policy had set tasks to improve the Central Bank's foreign exchange interventions, develop the institution of market makers, transfer foreign exchange trading from the current "fixing" method to continuous "matching" auction and increase the role of commercial banks in exchange rate formation.

Based on these tasks, by the decision of the Board of the Central Bank from **February 15, 2021**, the following changes were made to the operations in the domestic foreign exchange market:

1. In determining the exchange rate the method of "fixing"[3] was transferred to the method of continuous auction - "matching". Most developing countries, as well as all countries that have introduced inflation targeting conduct trades using a continuous auction ("matching") method.

In a **continuous auction** in the domestic foreign exchange market trading lasts longer, buyers and sellers trade at different exchange rates **according to mutually agreed bids**, and **the role of market participants in determining the exchange rate increases.** The central bank also carries out its interventions as a market participant.

This method allows for a wider introduction of market principles in the formation of the exchange rate, ensuring its formation completely on the basis of supply and demand, as well as increasing its flexibility to macroeconomic conditions. According to these changes, trading sessions on currency exchange at the foreign exchange are carried out from 10:00 to 10:30 by the

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[3] In trading by **"fixing" method,** a single exchange rate is set to ensure an equilibrium volume of bids for purchase and sale on the domestic forign exchange market.

method of **"call auction"** and from 10:30 to 15:00 by the method of **continuous auction "matching"**.

2. The daily setting of the official exchange rate of the Central Bank has been established. As a result of the transition to the "matching" method of trading in the domestic foreign exchange market, the conclusion of foreign exchange contracts at different exchange rates (based on mutual agreements of banks) has created the need to determine the average daily exchange rate after trading.

Herewith, **the official exchange rate** is set as the average weighted exchange rate of transactions carried out through the auctions on the foreign exchange from 10:00 to 15:00, and announced each bank working day **at 16:00.**

3. Currency transactions have been harmonized with international standards. Settlements on foreign exchange transactions in the domestic foreign exchange market are made in the form of **T+0** (today), i.e. the transfer of funds by commercial banks is hold on the same day.

Forms **T+1** (next working day) and **T+2** (next working day) are widely used in international practice and standards for foreign exchange transactions, which allows commercial banks to trade freely in the foreign exchange market and form their own liquidity based on trading results.

4. Commercial banks were given the opportunity to trade freely in the domestic foreign exchange market. In order to increase the role of commercial banks in the further development of the domestic foreign exchange market, in particular in determining the exchange rate, the practice of interbank foreign exchange trading by commercial banks **on behalf of clients** have been abandoned and banks are now allowed to freely buy and sell foreign currency within **their open foreign exchange position**. Giving commercial banks the opportunity to freely sell or buy foreign currency in the domestic foreign exchange market through open foreign exchange positions on a continuous auction method **encourages their participation in determining the exchange rate** and promotes the formation of a balanced exchange rate.

5. The "Strategy of foreign exchange interventions of the Central Bank of the Republic of Uzbekistan for 2021-2025" has been approved. The strategy covers the main principles, goals and objectives of the Central

Bank's foreign exchange interventions, forms of intervention and communication processes in this area.

Operational mechanism of monetary policy

During 2021, the **short-term monetary operations** of the Central Bank were improved, and today the operating mechanism is as follows.

The operational mechanism of the Central Bank's monetary policy

Objective	Tool	Terms	Interest rate
Liquidity provision	REPO auction	Up to 14 days (Monday)	Key rate (lower bound)
	SWAP auction	Up to 14 days (Monday)	Key rate (lower bound)
	REPO overnight operations	1 day (permanent, in unlimited amount)	Key rate + 2%
	SWAP overnight operations	1 day (permanent, in unlimited amount)	Key rate + 2%
Liquidity absorbtion	Overnight deposit operations	1 day (permanent, in unlimited amount)	Key rate - 2%
	Deposit auction	Up to 14 days (Tuesday and Thursday)	Key rate (upper bound)
	Central Bank's bonds	Up to 12 months (based on schedule)	Key rate (upper bound)

It should be noted that in assessing the **adequacy** or excess **of liquidity** in the banking system, the Central Bank uses standards that are widely used in international practice. In particular, starting from 2018, the use of the averaging ratio in the reserve requirements has been introduced, and today this figure is **0.8 units**. In other words, commercial banks have the opportunity to keep **80%** of the required reserves on their correspondent accounts. Banks can use these funds to make payments to their clients during the working day and must ensure that the average daily balance during the accounting period is not less than this amount.

If the liquidity of the banking system exceeds this average, there is a positive gap, if it is less, there is a negative gap. According to the **mechanism of analysis and forecasting of the liquidity** of the banking system, the Central Bank determines the **volume and timing of monetary operations** required for the effective management of the existing deficit / surplus.

III. GUIDELINES OF MONETARY POLICY IMPROVEMENT IN 2022-2024

3.1. Measures for further development of operational mechanism and the interbank money market

In the current operational mechanism of monetary policy, a **new set of instruments was introduced** in 2020 as part of the inflation targeting regime, and in 2021 the focus was on **improving** existing **instruments**, expanding their timing, scope and application, and optimizing the operating mechanisms.

One of the most important tasks at the next stages in this direction is the **full adaptation** of the instruments of this operational mechanism and monetary policy processes to the standards of the inflation targeting regime.

In this respect, it is planned to take a number of measures in 2022 and 2023-2024 to improve the efficiency of the liquidity regulation in the banking system, further enhance the participation of banks in the money market, expand the secondary trading in government securities and thereby develop the interest rate channel of the transmission mechanism.

1. Improving liquidity analysis and forecasting. In 2019-2021 new methods of analyzing and forecasting the liquidity of the banking system have been introduced. In-depth study of **each factor** that affects overall liquidity has made it possible to effectively forecast their expected impact through constant information exchange.

Today, work is underway to introduce **econometric models** and their widespread use in forecasting the liquidity of the banking system and the amount of cash in circulation. Starting from 2022, the liquidity forecast will move to be fully based on the results of models.

The study of the **impact of the Government's operations on banking system liquidity**, with forecasting for the next period taking into account seasonal factors, and the possibility of using liquidity forecasting for determining the volume and timing of using short-term monetary policy instruments will also be expanded.

The system of information exchange with the Ministry of Finance regarding the Government's operations, with commercial banks regarding the demand for cash and foreign currency, with Uzbekistan Fund for

Reconstruction and Development, the State Agriculture Support Fund and the Pension Fund regarding their operations will be improved and the quality and accuracy of data will be increased.

2. Developing a liquidity management strategy. In order to select the right sequence of changes in the operational mechanism and to ensure transparent communication on them it is planned to develop a medium-term **"Liquidity management strategy"** of the Central Bank in the coming years.

The development of this strategy in cooperation with experts from IFIs, with an in-depth study of the experience of other countries which have switched to inflation targeting, will serve to **ensure** that the **measures** taken in this direction are **structured and effective**.

The "Liquidity management strategy" will be developed in the form of a **roadmap** and will serve as the basis for monetary policy decisions and ensure effective liquidity management.

Alongside with the roadmap, a medium-term (not less than 3 years) liquidity forecast in terms of factors will be developed.

3. Further improvement of the mechanisms of monetary policy operations. The main focus in this direction will be on increasing the role of short-term monetary operations of the Central Bank in price formation in the money market, providing accurate signals about the situation in the monetary sector and thus increasing the effectiveness of the transmission of decisions on the key rate to the interest rates in the economy.

In particular, it is planned to transfer the main monetary operations from auctions to **"fixed rate full allotment" operations**, while the current deposit auctions will be replaced by deposit operations for up to 14 days without volume limits. The interest rate on these operations will be equal to the key rate of the Central Bank.

Moving the auctions to fixed rate operations will help to **reduce the volatility** of interest rates in the money market relative to the key rate, increase the impact of the key rate and the efficiency of the transmission mechanism.

The effectiveness of the **abolition of the upper limit on Central Bank** bonds is also being studied. Today, the **upper bound on yields** at Central Bank bond auctions is set at the level of the key rate.

When regulating the liquidity of the banking system, the interest rates on the Central Bank's instruments for short-term operations (overnight transactions and auctions) should act as a **price maker** and for long-term operations (bonds) as a **price taker**. Therefore, it is assumed that this **temporarily set** upper bound will be eliminated.

4. Improvement of the monetary policy operational target. It is planned to change the **operational objective** of monetary policy to ensuring the formation of interest rates on overnight deposits in the money market within an interest rate corridor close to the key rate of the Central Bank.

In most countries that have switched to inflation targeting, the interest rates on **overnight operations** in the interbank money market were adopted as the basis for the operational target.

Due to the **small number of transactions** in the interbank money market and the **low activity of banks** in the country when setting the operational target the objective was to ensure the formation of the interest rates on deposits in the money market for **up to 14 days** in the interest corridor close to the main rate.

Today, due to the increase in the number of money market operations, including the number and volume of overnight operations, the conditions have been created for the change of the target base from deposits with the term **up to 14 days** to overnight deposits with the term of **1 day**.

At the same time it is planned to improve the money market indices. In January 2021 the Central Bank introduced **"UZONIA"** and **"UZWIA"** indexes of interest rates in the money market. In today's underdeveloped capital and financial markets, these indices serve as a key reference point **("benchmark")** for the valuation of financial instruments in the economy.

Enhancing the credibility of indices is primarily related to ensuring the **transparency** of the calculation **methodology**, setting up an effective operational mechanism to prevent abrupt fluctuations in the indices and creating conditions for an increase in the number of transactions on the money market. Work in this direction is one of the main objectives of monetary policy in the coming years.

5. Increasing the activity in interbank money market. Today, only the **unsecured interbank money market** is active. Due to the general surplus of liquidity in the banking system and the fact that this surplus is spread across

almost all banks, there has been a slight decline in money market activity in recent months. It should be noted that in order to encourage banks to redistribute liquidity and increase the attractiveness of money market operations, the **Central Bank has expanded the interest rate corridor**.

In the medium term, it is planned to develop communication relations with banks and increase the number of seminars on efficient liquidity management for them, improve the skills of banking specialists by inviting IFI experts, accelerate the transformation of the banking system, and stimulate banks' activity in the money market. In turn, **organizing an inter-bank REPO market** to increase confidence in banks' mutual transactions and reduce risks is also an important issue.

Also, taking into account the situation in the monetary sphere, measures will be taken to further develop the money market by ensuring effective integration of monetary and prudential policies.

3.2. Guidelines for further development of the domestic foreign exchange market

In the medium term, the Central Bank plans to implement a number of measures to further improve the domestic foreign exchange market and increase the role of participants in the formation of the exchange rate. In particular, the Central Bank is now a major player in the domestic foreign exchange market and its role in supplying foreign exchange is large. However, as the domestic foreign exchange market develops, the aim is to gradually reduce the role of the Central Bank and increase the role of commercial banks as **market makers.**

Market makers are key players in the foreign exchange market, helping to increase market liquidity and determine a balanced exchange rate, **ensuring supply and demand for foreign currency**. Increasing the number of banks acting as market makers will contribute to improving the efficiency of the interbank foreign exchange market.

In addition, the Central Bank now acts as a **central counterparty**, intermediating between market participants, ensuring timely fulfilment of obligations for transactions on the domestic foreign exchange market and assuming risks. Based on international experience, the central counterparty function is to be transferred to the **Republican Currency Exchange**.

A target to radically improve the activities of the Republican Currency Exchange, create a modern trading infrastructure and expand cooperation and integration with international financial institutions, financial markets and foreign exchanges has been set.

In turn, in order to further develop the domestic foreign exchange market and mitigate the effects of possible external shocks that could adversely affect the financial condition of businesses and to reduce foreign exchange risks in the country, **hedging instruments** (swaps, futures, etc.) will be introduced on the Republican Currency Exchange.

In order to improve the **competitive environment** for attracting customers (legal entities) among commercial banks, to enhance the attractiveness of the exchange rates offered by them to legal entities, to create convenient conditions for offering or raising necessary funds in the domestic foreign exchange market through a bank, there will be an opportunity for business entities to conduct operations of buying and selling currency in any bank (without changing the bank servicing the main account).

In turn, to prevent **speculative behaviour** by commercial banks when buying and selling foreign currency on the currency exchange and from clients, it is planned to introduce a **"Code of Ethics"** containing generally accepted best practices of global foreign exchange market participants.

Overall, the Central Bank will continue to take measures to further improve the domestic foreign exchange market in the coming years.

3.3. Guidelines for the development of analytical capacity

In the long run, with structural reforms in the economy, in particular further liberalization and a reduced role of the state in the economy, more in-depth analysis and forecasting will be required to make fully informed monetary policy decisions.

Today, the Central Bank's monetary policy decision-making is based on the **Forecasting and Policy Analysis System** (FPAS). The **Quarterly Projection Model (QPM)** currently used by the Central Bank is the key model in developing macroeconomic forecasts. The QPM is a semi-structural model for an open economy that helps formulate medium-term macroeconomic forecasts.

This model is based on interdependent **four basic blocks** - **output** (IS curve), **inflation** (Phillips curve), **short-term interest rate** (monetary policy reaction function) and **exchange rate** (uncovered interest rate parity condition). In 2021, the model has been extended by adding the fiscal and credit blocks to the aforementioned blocks.

In 2022 and subsequent years, the QPM will be supplemented with new blocks (in particular, external sector indicators), and model parameters will be adjusted to reflect structural changes in the economy.

In addition, it is planned to expand the **range of econometric models** for identifying relationships between various macroeconomic indicators and forecasting them.

Such models as **DFM, VAR** and **ARDL** are to be improved in projecting real GDP growth in the short term.

Starting next year, it is planned to introduce a **dynamic stochastic general equilibrium (DSGE) model** for macroeconomic policy analysis, with technical assistance from international financial institutions, to examine the interdependence of various economic indicators.

The model helps assess the consistency of monetary, fiscal and general economic policies. It is also used to quantify the impact of decisions on selected indicators.

Preliminary results of short-term inflation forecasts using the **BVAR** model have been published in 2021 and in the next phase the model is to be fully implemented.

In addition, steps will be taken to make full use of the functionality of **VECM** models to analyse past inflation factors.

In order to study the level of inflation and factors affecting it, as well as inflation expectations of population and businesses, it is planned to **improve** the system of conducting and **methodology of analysis** of monthly survey on inflation expectations and quarterly survey on consumer sentiment by the Central Bank.

Also, from the next year, a system for studying **long-term inflation expectations** of households and businesses (two-year and three-year) will be implemented.

A new system of **qualitative study** of price dynamics and their factors, economic processes and expectations in the country's regions is to be introduced. Qualitative **assessment** and generalization of economic processes, inflation factors and behavior of economic agents will be **carried out** based on the specifics of each region. This information will be used as an additional component in taking monetary policy decisions.

The capacity of the **online consumer price monitoring** system (OPM), introduced in August 2021, is to be increased and the processes of collection, aggregation and grouping of prices are planned to be fully automated, eliminating the human factor. The number of outlets where prices will be monitored and the range of data obtained from them will be expanded.

Online price monitoring system

The publication of official data on the consumer price index only on a **monthly basis** limits the ability to quickly analyze the dynamics of prices in the inflation targeting regime. The issue of reducing this periodicity has necessitated the calculation of **alternative indicators.**

Starting from August 2021, the Central Bank has introduced an **online price monitoring** system (OPM) in order to quickly and continuously monitor changes in prices for basic consumer goods and services from **alternative sources without the human factor**.

In recent years, statistical agencies and central banks of many countries have introduced systems of price collection and analysis using **websites and remote systems** *(price scanning&web scraping)*. Using these systems, it is possible to track the prices of pre-selected consumer goods and services quickly and on a small periodic basis (daily, weekly) on the basis of information which is widely available on the Internet.

The development of large retail supermarkets, **online trading platforms** of manufacturers, shops and service providers in our country, the increase in the number of online outlets, as well as the widespread development of online services in pandemic conditions have allowed the implementation of online price monitoring in Uzbekistan.

The collected data will be processed in accordance with the International Monetary Fund's handbook "Consumer Price Index Manual 2020: Concepts and Methods" and the guidelines of the European Bureau of Statistics. The processed data is summarized on the basis of the **weights** of goods and services used by the State Statistics Committee in calculation of the consumer price index, and **Consumer Price Alternative Index (CPAI) is calculated on a weekly basis.**

One of the advantages of this system is that the data is clear, transparent and fast. That is, the data is collected online maximally without **human factor**. At the initial stage, about **1,000 prices** will be tracked from about **50 website applications** through an online price monitoring system.

For this purpose, 261 types of food and non-food goods and services, which are the **most consumed by the population** and have the **highest weight** in the CPI, were selected. In particular:

- **114** food goods;

- **108** non-food goods;

- **39** services.

This is **71.2%** of the CPI calculated by the State Statistics Committee on **510** goods and services.

When selecting goods and services:

the main attention is paid to the prices of goods and services of points of sale, which are **widely consumed** (used) by the population, which are **constantly** available on the websites of trade facilities and **periodically updated**;

goods at a discount, sold on the basis of actions with a gift and with a certain privilege are **not taken into account**;

goods with the **characteristics closest** to of those included by the State Statistics Committee in the CPI were selected.

When calculating the alternative CPI:

the **average weekly price** for one product is calculated on the basis of the recorded prices of goods and services during the observation period (daily, weekly), using weights of the retail outlet and goods;

if a outlet has samples of two or more trademarks of the same product category, then **separate weights** are set for each product sample;

prices of the same product can be taken from two or more trading platforms, with the determination of weights of trading platforms based on their **popularity** and **trade volume**;

when calculating the weekly price change of goods and services, the prices observed in the first week of the month are considered as the **base price**. Prices recorded during the next week are compared to base prices and the change is calculated. At the end of the month, the **aggregate alternative index** is calculated based on changes in weekly average prices of goods and services.

Dynamics of prices collected through the online price monitoring system
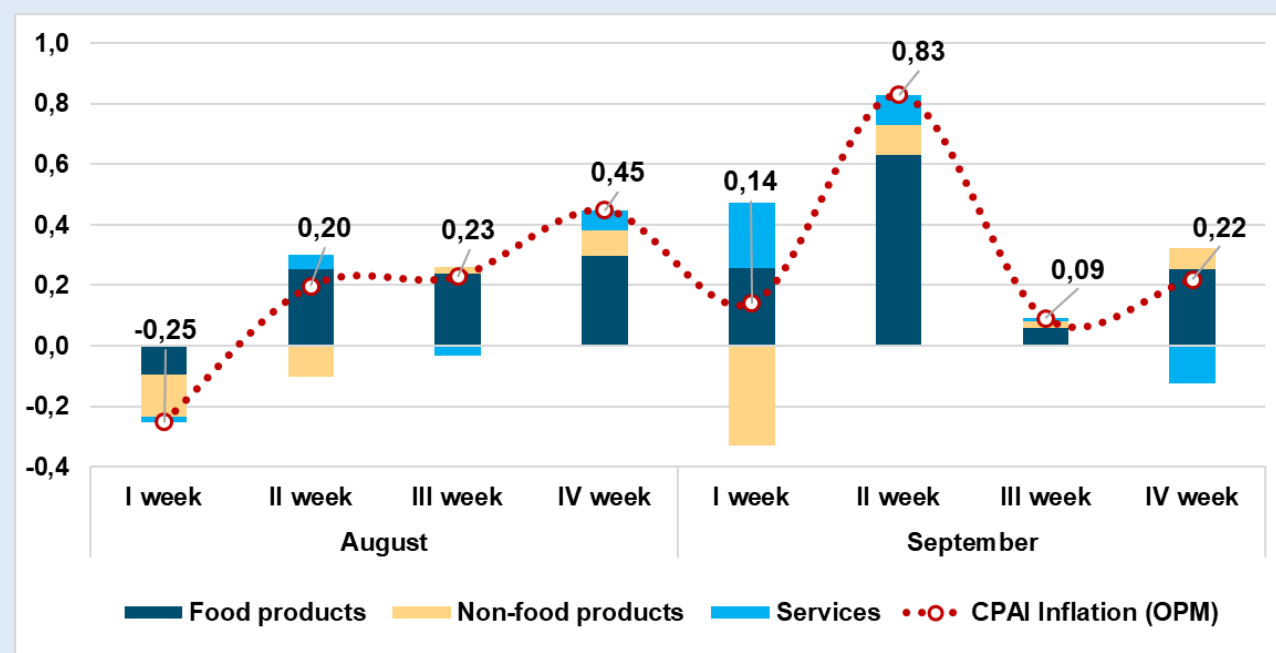
Modernization of the system

In the next stages, it is planned to expand the capacity of this **system through digital technology** (machine learning) and the widespread introduction of special algorithms to completely eliminate the human factor, further increase transparency by publication of daily prices and their dynamics. As the number of online sales and service facilities increases, they will be integrated in the system, the system will be synchronized with the sales terminals of trade networks, and the types of goods and services and product samples will increase.

3.4. Guidelines for improving the efficiency of the monetary policy transmission mechanism

The central bank influences interest rates in the economy, the price of financial assets, and macroeconomic expectations by **changing the key policy rate**. This, in turn, is reflected in the decisions of the population and businesses on consumption, savings and investment, and affects the **level of inflation** through **aggregate demand** and **supply** of goods and services.

The transmission of monetary policy decisions to the economy takes place through several channels. When making monetary policy decisions, the Central Bank comprehensively assesses the impact of the decision on the economy through the channels of the transmission mechanism and takes **into account the speed, impact and direction of impact.**

Interest rate channel. This channel is the main channel that ensures the transition of monetary policy decisions of the Central Bank to the economy under the inflation targeting regime, and therefore this channel will be improved primarily to increase the **impact of the Central Bank on interest rates in the economy.**

In 2020-2021 necessary conditions and tools have been introduced to increase the efficiency of the interest rate channel, in particular, through the establishment of an **effective operational mechanism** for transition of decisions on the key rate to the money market. As a result, the impact of monetary policy decisions on money market interest rates has increased.

In this regard, it is expected that measures to further improve the operational mechanism and increase the activity of the interbank money market in the coming years will increase the impact of **short-term interest rates** in the money market on **medium and long-term interest rates**, including **interest rates on deposits and loans**.

It should be noted that changes in the Central Bank's key rate affect on the economy and inflation with some lag.

In particular, the analysis and observations show that the impact of key rate decisions on money market interest rates occurs within **1 month**, and their subsequent transition to interest rates on deposits takes **3-6 months**

and the impact on interest rates on loans appears in **6-12 months** *(Figure 21).*

Econometric analysis shows that changes in interest rates due to various factors affect the inflation rate with a delay of **2-6 quarters**. Therefore, the Central Bank makes decisions on the key rate based on **medium-term macroeconomic forecasts.**

Figure 21. Lags in transmision of Central Bank's decisions on the key policy rate to the economy
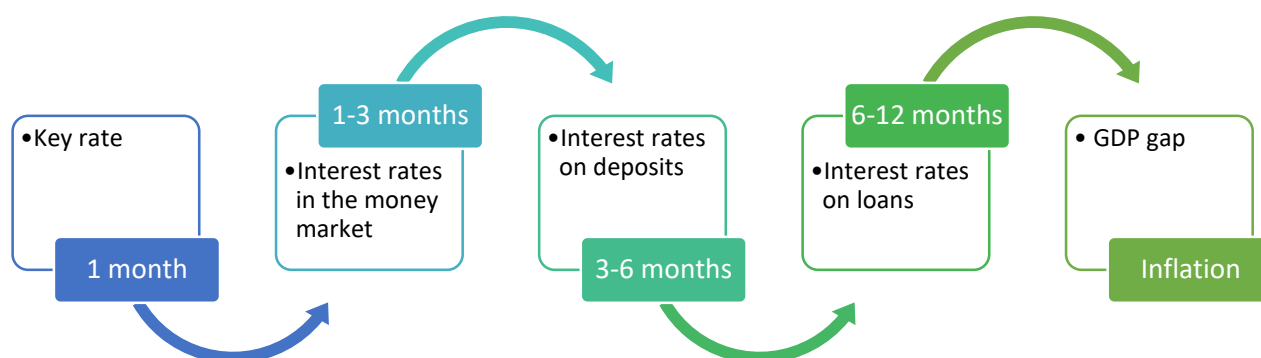
Source: Central Bank

In order to increase the efficiency of the **first phase** of the interest rate channel the Central Bank will continue to align short-term monetary policy instruments with standards of inflation targeting regime. **The second phase**, that is increasing activity of banks in the money market and formation of an interbank REPO market, requires a **combination of monetary and macroprudential policies**.

In addition, today the **gap** between interest rates on short-term and long-term deposits in the money market is relatively high and their impact on interest rates in the economy is low. With growing confidence of banks in monetary policy and permanent availability of the Central Bank's operations these inconsistencies are expected to reduce.

In turn, the **development of financial markets**, including the increase of the activity in the secondary government securities market, is important in increasing the impact of interest rates on macroeconomic indicators. At the same time, interest rates in the money market will be one of the main criteria in assessing the **yields** of government securities. Therefore, the Central Bank in cooperation with the Ministry of Finance are significantly increasing the **volume of government securities in circulation.**

There are some problems in the second phase of the channel, namely in the transmision of money market interest rates to the economy, which is primarily due to the **strong demand for banking services, the high dollarization of savings and loans**.

Demand for loans that have accumulated over many years has occured as a result of the policy of openness and structural reforms over the last 3-4 years, which in turn has led to an increase in interest rates on loans. As a result, while high interest rates put additional pressure on inflation by **negatively affecting the formation of inflation expectations**, the rapid growth of loans is accelerating inflationary processes by **increasing aggregate demand**.

Therefore, the Central Bank will continue to balance the growth of loans and interest rates in the coming years through the **consistent application of monetary and prudential policies.**

It is also expected that in the medium term, the inflow of savings into the banking system will gradually increase due to the **provision of acceptable real positive interest rates on bank deposits, the formation of a stable exchange rate and the widespread development of digital banking services.**

Exchange rate channel. In countries with free capital flows and sufficiently developed financial markets there is a strong correlation between **the interest rate channel and the exchange rate channel**. In particular, lower interest rates lead to a decrease in capital inflows into the country, putting pressure on the national currency exchange rate.

In our case, the **interdependence of interest rate and exchange rate channels is relatively low** due to underdeveloped financial and capital markets, limited access of nonresidents to financial markets, the interest rate channel can only affect the flow of foreign credit lines to the banking system.

Fluctuations in interest rates have a significant impact on the saving behavior of the population, in particular, the **currency of savings**. In particular, interest rates lower than inflationary expectations of the population may lead to an increase in the **dollarization of savings**. Therefore, when making decisions on monetary policy, the Central Bank will take measures to ensure **a positive real interest rate of 2-3%.**

One of the measures to improve the exchange rate channel is to allow **non-residents** to participate in the government securities market, which will not only improve the environment for capital inflows into the country, but also help to develop the market infrastructure. At the same time, in order to prevent currency risks, it is necessary to **gradually** increase the share of non-residents in the securities market and **implement the necessary risk management tools ("hedging").**

Today, to influence the monetary conditions in the economy the interest rate channel is mainly used. The analysis of the exchange rate channel focuses on indicators such as **the trend of the real effective exchange rate (REER)** based on the formation of supply and demand in the domestic foreign exchange market.

In addition, exchange rate stability, in turn, has an **indirect** effect on the decline in inflation expectations of economic entities. Also, the dollarization of funds will decrease, and their return to the banking system will create factors that stimulate economic growth through the formation of sustainable investment resources in the economy.

In general, the formation of the exchange rate channel in the medium term will largely depend on the measures taken for **capital control** and the **state of foreign exchange flows.**

Credit channel. The credit channel is strongly linked to the interest rate channel, and changes in interest rates have a significant impact on the volume of loans and, consequently, on economic growth.

However, as noted above, the impact of changes in interest rates on loans growth is relatively low in our economy, due to the **"investment drought" emerged in recent years, preferential lending and the dollarization of loans.**

This dependence is felt more strongly in business entities, and the decrease in the profitability of business projects with the increase in interest rates reduces the demand for loans. As a result, the aggregate supply, along with the aggregate demand in the economy, declines.

On the other hand, the impact of rising interest rates on the volume of loans to the population is lower due to high demand for loans and high inflation expectations of households.

Therefore, there is a need to apply **prudential regulations**, in particular, to strengthen the requirements for the ratio of loans to income ("Loan-to-Income" ratio).

The Decree of the President of the Republic of Uzbekistan from November 18, 2019 "On improving monetary policy through the gradual transition to inflation targeting regime" provided for allocation all preferential loans at interest rates not lower than the key rate from **January 1, 2020** and at market rates from **January 1, 2021**.

However, in order to support the entrepreneurial activity of the population in the context of the coronavirus pandemic and the resulting economic crisis, **in 2021** the practice of **issuing loans** at the **key rate of the Central Bank** under state programs of family business continued.

At the same time, the Fund of Supporting Entrepreneurship pays part of the interest payments on loans to borrowers who start a business, if necessary, through the **compensation mechanism**, in order to facilitate the development of certain industries and areas.

Reducing the dollarization of loans is a relatively long-term process, dependent on lower interest rates on loans in the national currency and the widespread implementation of currency risk hedging instruments. In turn, it is not possible to reduce the dollarization of loans only through monetary policy instruments, and in this direction the **consistent application of monetary and macroprudential policies** is effective.

Expectations channel. **Inflation expectations** of the population and business entities, expectations of financial market participants on the **future dynamics of interest rates** and expectations on monetary policy, in general, are the **main factors** influencing the decision-making of economic entities.

The expectations channel is inextricably linked to the interest rate channel, while changes in interest rates affect inflation expectations, in turn, inflation expectations **are the basis for setting equilibrium interest rates on deposits and loans** in the economy.

In the coming years, the Central Bank will continue to study and analyze perception of inflation, expectations of the population and businesses and the factors that influence them. From 2022, it is planned to improve the methodology for analyzing and publishing the results of surveys.

In turn, it is important to study the inflation expectations of the **banking system**, as their expectations have a significant impact on interest rates on loans and deposits. Therefore, in the future it is planned to conduct surveys among employees of the banking system to study inflation expectations.

Communication channel. The effective transmision of monetary policy decisions to the economy largely depends on the confidence of economic entities in the banking system, the Central Bank and the national currency. **The role of the communication channel** in increasing this confidence **is important.**

In the next year, special attention will be paid to further improvment of the **communication policy**. Particularly, **publishing** of **press-releases** after each Board's meeting on consideration the key rate (8 times a year) and **holding press-briefings** on following the main Board's meetings (4 times a year) will be continued.

It is also planned to develop **a strategy for monetary policy communication** with the assistance of the International Monetary Fund and other foreign experts, and this document is to include measures to be taken in the field of communication in the medium term.

Among the tasks to be carried out in the coming years in the field of communications are the organization of **seminars and trainings** on financial literacy of the population and the media, expanding the range of communication channels and tools, increasing the clarity of published comments and information, as well as implementation of **targeted communication.**

In turn, the Central Bank will continue taking measures to further improve analytical reports, such as "Monetary Policy Review", "Banking System Liquidity Review", "Consumer Sentiment Review" published quarterly.

Changes in the structure of commercial banks' loan portfolio and dynamics of interest rates

As of October 1, 2021 total loan portfolio of commercial banks amounted to **310 trillion soums**, herewith, the share of loans in national and foreign currency was almost equal. At the same time, about **79%** of the total loan portfolio were loans to businesses, the balance of these loans in national and foreign currency amounted to **91 trillion soums** and **153.2 trillion soums**, respectively *(Figure 1).*
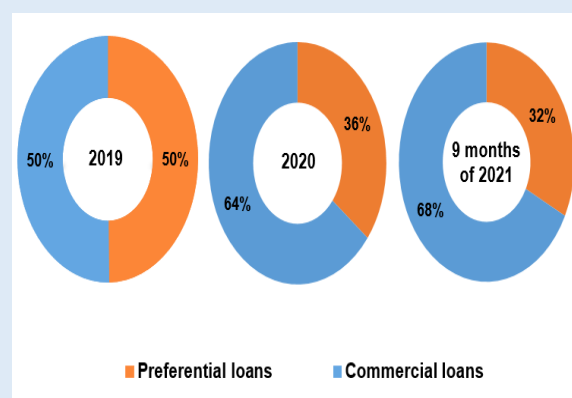
Figure 1. The loan portfolio of commercial banks, *as a percentage, in billion soums*
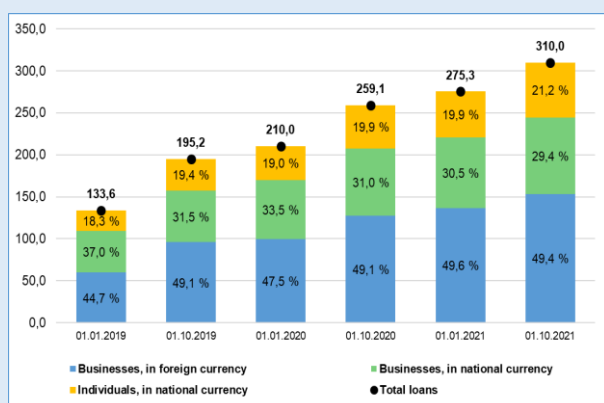
Figure 2. Composition of loans in national currency, *in percent*
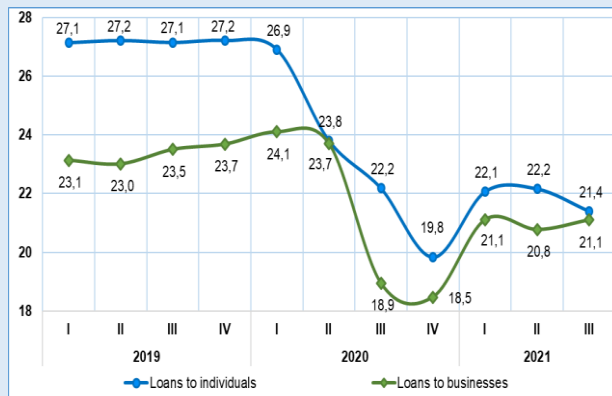

Source: Central Bank

The balance of loans to the population for the first 9 months of 2021 amounted to **65.8 trillion soums**, and its share in the total loan portfolio increased by **3 p.p.** from the beginning of 2019.

The work on the implementation of market mechanisms in the economy and increasing the role of the private sector, in turn, leads to the widespread popularity of banking products among the population. In particular, the share of **mortgages** and **car** loans, which have the largest weight in the structure of loans to the population, has increased significantly in recent years, reaching **23.2%** and **7.2%,** respectively, in September 2021.

Also, as a result of measures taken to introduce market principles in the process of lending to the economy, the share of preferential loans in the structure of loans decrased from **50%** in 2019 to **36%** in 2020 and to **32%** in 9 months of 2021. This, in turn, contributes to **lower interest rates** on new loans provided by commercial banks *(Figure 2).*

The reduction in the share of preferential loans and the transfer interest rate on them will allow commercial banks to lower interest rates on market loans and to cover operating costs by increasing the volume of lending, and rising the interest income. In particular, in 2019, the average interest rates on total loans to individuals and businesses in the national currency formed at a high level, and from the second half of 2020, the interest rates on these loans began to decline. In the first 9 months of 2021, however, interest rates stabilized relatively without large fluctuations *(Figure 3).*

Figure 3. Average weighted interest rates on loans in national currency allocated in 2019-2021

Figure 4. Interest rates on the balance of loans in the national currency issued on market principles

Source: Central Bank
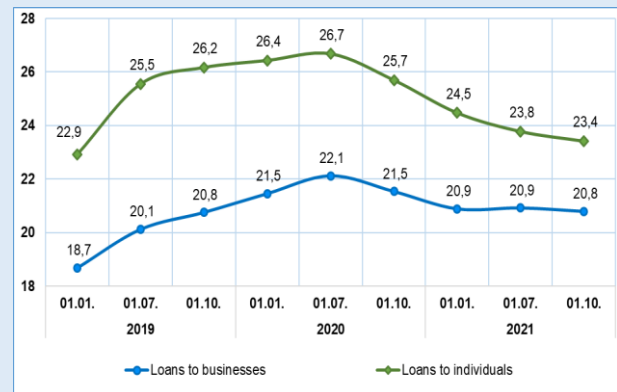
In the first 9 months of 2021, the volume of interest income of commercial banks increased by **28.4%** compared to the same period last year.

At the same time, the weighted average interest rates on the balance of loans in the national currency allocated on the basis of market principles decreased by **3 percentage points** on loans to individuals and **0.7 percentage points** on loans to businesses compared to the beginning of 2020 *(Figure 4).*

Appendixes

Appendix 1

Schedule of the Board meetings of the Central Bank of the Republic of Uzbekistan to consider the key policy in 2022

Meetings of the Board of the Central Bank to review the key policy rate in 2022 will be held on the following schedule:

January 20;

March 10;

April 21;

June 9;

July 21;

September 8;

October 20;

December 15.

Following the results of all Board meetings, a press release of the Central Bank will be published on the official website of the Central Bank.

Also, a press conference with the participation of the management of the Central Bank will be held on January 20, April 21, July 21 and October 20 and the "Monetary Policy Review" will be published based on the results of the Board meetings.

Appendix 2

The role of inflation targeting in ensuring sustainable economic growth and reducing inflation

Achieving high and inclusive economic growth and ensuring macroeconomic stability is the main goal of countries' economic policies. But at the same time there is an ongoing debate regarding the relationship between economic growth and inflation.

Although many economists on the basis of empirical analysis have come to the same conclusion on the **positive impact** of the transition to inflation targeting and low stable inflation on medium and long-term economic growth[4], some economists believe that the role of the inflation targeting regime in ensuring economic growth is relatively low.

High inflation adversely affects economic growth through channels such as lower real incomes, reduced propensity to save, high interest rates, reduced competitiveness of domestic producers, increased uncertainty for business, and, consequently, reduced investment spending. In addition, high **inflation expectations** put pressure on production costs and the exchange rate.

Under conditions of high inflation, the formation of false signals about **relative price changes** for producers, consumers and economic decision-makers reduces the efficiency of resource allocation processes in the economy.

These factors explain the role of low and stable inflation rate in ensuring economic growth.

In turn, there is an obvious question which level of inflation is **neutral** and **positive** for economic growth.

Neutral and positive levels of inflation for economic growth depend on the structural aspects of the country's economy, its characteristics, the share of the state in the economy, the level of development of financial markets, integration with foreign markets and many other factors.

Taking into account these aspects empirical studies have calculated a **quantitative value** (the limit point) of the inflation rate in different groups of countries, after which there is a negative impact on economic growth.

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[4] Barro (1991), Fisher (1983, 1993), Bruno, Easterly (1998), Sbordone, Kuttner (1994), Fisher, Sahay, Vegh (1996) obtained results in their studies proving the positive effect of low stable inflation on economic growth.

In particular, econometric analysis based on the data of **24 countries that use inflation targeting**[5] showed that the level of inflation above **4.182%** may have a negative impact on economic growth. An inflation rate above **4.182%** by **1 percentage point** is expected to slow economic growth by **1.478 percentage points** over the medium term.

Another group of researchers[6] analyzed the relationship between inflation, inflation uncertainty and economic growth in **94 developing countries** and found that inflation above **5.55%** has a negative impact on economic growth in developing countries.

Quantifying the importance of inflation targeting for reducing inflation

The Central Bank of the Republic of Uzbekistan conducted a **quantitative assessment** of the impact of the preparatory work for the introduction of the inflation targeting regime, which began in 2017, and the transition to the active phase of inflation targeting from 2020 on inflation in our country.

The method of **cause-effect analysis** was used in the study. Causal analysis assesses the impact of economic changes and reforms in the country on specific economic indicators.

At that, the inflation rate without taking into account the changes in the monetary sector (in the context of absence of inflation targeting) was forecasted on the basis of the **Bayesian Structural Time Series** (BSTS) model, and the results were compared with the current inflation rates. The difference between the indicators was considered as a **coefficient of effect**.

The green line in the figure represents the **sum of the monthly differences** between the current and projected inflation rates. It is the sum of these differences that can be considered as a quantitative indicator determining the impact of the transition to inflation targeting on the dynamics of prices in the economy.

After the beginning of the active phase of the transition to inflation targeting, the actual average monthly inflation rate was **0.8%**, according to the forecast, the average monthly inflation rate without regard to the impact of the measures taken was **1 %.**

At the same time, the average monthly reducing effect of the measures taken for the transition to the inflation targeting regime on inflation was **0.21%.**

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[5] Ekinci, Ramazan; Tüzün, Osman; Ceylan, Fatih "Relation between inflation and economic growth: experience of countries with inflation targeting regime", 2020.
[6] A.Z. Baharumshah, Ly Slesman, Mark E. Wohar "Inflation, inflation uncertainty and economic growth", 2016

Difference between actual inflation and inflation forecast without switching to inflation targeting
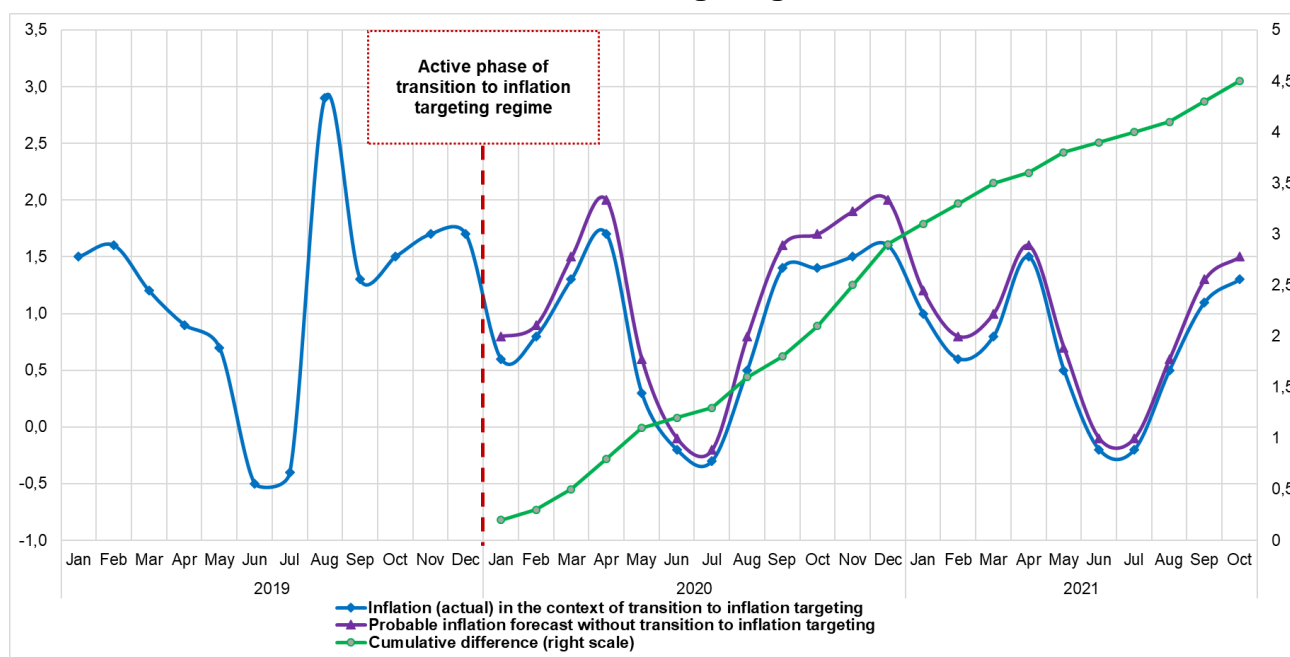
Source: Central Bank

From January 2020 to October 2021, the cumulative inflation rate was **17.5%,** and the cumulative monthly inflation forecast for the period excluding the interventions was **22%**. As a result, the switch to inflation targeting reduced inflation by **4.5%.**

The probability of the impact of the switch to inflation targeting on overall inflation is **83%.**

While this figure is high, without intervention the probability of inflation falling by **4.6%** under normal conditions is **17%.**

Overall, **long-term time series** are needed to assess the impact of inflation targeting on economic growth and inflation in our country. Future steps will be taken to further improve this analysis.

Appendix 3

Potential of the BVAR model in forecasting inflation

For the effective implementation of the inflation targeting regime, monetary policy decisions will be made on the basis of a medium-term inflation forecast based on short-term forecasts for the next 2-3 quarters.

Today, the Central Bank of Uzbekistan uses short-term inflation forecasts from the following forecast models:

ARIMA – autoregressive integrated moving average;

DFM – dynamic factor model;

FAVAR – factor augmented vector autoregressive model.

These models include the BVAR and SVAR short-term forecast models, which are currently under development and under improvement.

Each of the above approaches has its advantages and disadvantages, which complement each other.

In practice, it is difficult to find a perfect model that fully and accurately describes real and future trends in the economy, so most central banks use multiple models at the same time to ensure maximum accuracy of forecasts.

At the same time, the main criteria for selecting models for short-term forecasting of inflation is their degree of conformity to real data and the accuracy of non-sample forecasts.

Bank of Russia uses a combined method of forecasting short-term inflation[7]. This allows more data to be used. Thus, forecasts for each sub-index of CPI (consumer price index) are made using different models (VAR, BVAR[8], RW, LSTAR, UC) and each of the models provides a specific generalized forecast of inflation. The forecasts from the various models are then aggregated with weights in proportion to their accuracy to obtain the final inflation forecast.

Among the short-term forecasting models, the Bayesian Evaluation of Vector Autoregressive Model (BVAR) is the most widely used tool in inflation forecasting.

For instance, in a study conducted by Central Bank of the Republic of Turkey, the effectiveness of forecasting inflation using BVAR was assessed

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[7]Forecasting inflation by the method of combining forecasts in Bank of Russia. Series of reports on economic researches (Прогнозирование инфляции методом комбинирования прогнозов в Банке России. Серия докладов об экономических исследованиях). August 2016. Andrey Andreev.

[8] Modeling th Russian Economy using BVAR (Моделирование Российской экономики с помощью BVAR). Gaidar Forum. 2018. Lomivorotov Rodion.

according to alternative classifications. The results show that BVAR provides more accurate predictions when used as a logarithmic difference from variables.[9] The variables are oil prices, import prices, exchange rates, production gaps, real labor costs, inflation expectations, and CPI.

Furthermore, Research Department of the Central Bank of Albania has published a working paper that provides a comparative analysis of the BVAR and VAR models. The results of the analysis showed that BVAR allows to cover more endogenous (dependent) variables and solves the "overfitting" problem of the typical standard VAR model.

Thus, the expansion of the range of short-term forecasting instruments with the BVAR model will allow a comprehensive analysis of inflation and strengthen the forecasting capacity of the Central Bank.

BVAR (Bayes vector autoregression) uses the Bayes method to estimate vector autoregression (VAR). Vector autoregression (VAR) is a statistical model used to determine the relationship between several variables by their change over time.

VAR is a generalization of a single dependent variable autoregression (AR) model. As in the autoregression model, there will be an equation for each variable that models its formation over time. This equation is a periodic indicator of the previous values (lags), which consists of lags and errors of other variables in the model.

For example, the VAR model, which consists of n dependent (endogenous), d independent (exogenous) variables, and the number of lags is equal to p, is represented in the following general form:

$$Y_t = c + A_1 Y_{t-1} + \cdots + A_p Y_{t-p} + D z_t + \varepsilon_t, \qquad t = p + 1,...,S. \qquad (1)$$

Here:

Y_t - vector values of t -period dependent variables's $n{\times}1$ dimension,

Y_{t-i} previous values of Y_t in the i period and are called "i -lag" ($i = 1,...,p$),

z_t - vector values of independent variables with $d{\times}1$ dimension in t period,

A_i and D matrices dimensions $n{\times}n$ and $n{\times}d$ parameter matrices respectively,

S - the number of observations on the data.

For convenience, we denote following definition $T = S - p$.

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[9] A Bayesian VAR Approach to Short-term inflation forecasting. Central bank of the Republic of Turkey, 2019.

(1) if the equation is written in a more concise form:

$$Y_t = X_t \beta + \varepsilon_t \qquad (2)$$

where:

$X_t = W_{t-1} \otimes I_n$ and its dimension $n \times [n(np + d + 1)]$,

$W_{t-1} = \begin{pmatrix} 1 & Y'_{t-1} & Y'_{t-2} \cdots & Y'_{t-p} & z'_t \end{pmatrix}$ and its dimension $1 \times [np+d+1]$,

$\beta = \text{vec}(c, A_1, A_2, \cdots, A_p, D)$ and its dimension $[n(np + d + 1)] \times 1$.

Unknown parameters of the model β - coefficient vector and covariance matrix of Σ — Y_t.

This model was proposed by Christopher Sims as an alternative to systems of equations.

Unlike the standard regression model, in which a free variable is always present, all variables in the VAR model are considered interdependent. The advantage of VAR is its simplicity and flexibility in data management.

Evaluating the parameters of the VAR model in the classical methods can lead to parameter estimates that are very well suited to the data only because the model consists of a large number of variables, but are less accurate due to the problem of "overfitting".

This is because when the number of variables is relatively large and the data considered for model evaluation is relatively small, especially when the evaluation method (such as the smallest squares method) is designed to be as close as possible to the data, there is more "noise" than parameter. Likely to have an effect. Thus, even if the model is almost completely consistent with the data, its forecasting accuracy is sharply reduced.

In this case, it is recommended to evaluate such models by placing some restrictions that reduce the size of the parameter set. Therefore, the main issue is find **the most reliable constraint criteria as possible**.

The Bayesian method of evaluating the VAR model was originally developed by Litterman (1980) as a solution to the problem of "overfitting". The solution he proposed was to solve the problem of "overfitting" without imposing clear restrictions, such as the fact that some coefficients are equal to zero. When limiting parameters, it is not possible to be completely sure that some coefficients are zero, and it is not advisable to ignore their possible range of variation.The Bayes's point of view is exactly in line with this approach.

To solve this problem we can use **Bayes formula**:

$$P(\theta|Y) = \frac{P(\theta)P(Y|\theta)}{P(Y)}$$

here:

$P(\theta)$ – a priori (pre-test) probability,

$P(\theta|Y)$ – aposterior (post-test) probability and

$P(Y|\theta)$ – data probability (likelihood).

Note that formula denominator $P(Y)$ is simply a function of information. As $P(\theta|Y)$ and $P(Y|\theta)$ are calculated for the same date, you can skip the formula denominator. ($\propto$ - proportionality sign):

$$P(\theta|Y) \propto P(\theta)P(Y|\theta)$$

where $\frac{1}{P(Y)}$ is a coefficient of proportionality.

(2) is given as To estimate the VAR model parameters with the Bayes method, that consists overall 4 following steps:

1. **An initial view is formed** on the parameters that need to be evaluated. This preview usually contains information about — Y_t and X_t which are not derived from the given data β and Σ. Such initial views can be formed on the basis of research conducted by the researcher in the past or other data (evaluation of similar models). Basically, these initial views are expressed in terms of probability distribution. For example, the initial views on the matrix of coefficients β are formed as a distribution of the form $p(\beta) \sim N(\beta_0,\Omega)$, which contains the current views on the elements β_0.

2. Y_t and X_t are collected and is written data probability function (likelihood function).

3. Initial views about the model parameters generated in the first step updated with statistical information using the information probability function in the second step. In other words, a priori distribution of parameters $p(\beta,\Sigma$ and the data probability function $) L(Y|\beta,\Sigma)$ as in Bayes Combined using the formula, we get the aposterior distribution of parameters – $p(\beta,\Sigma|Y)$:

$$p(\beta,\Sigma|Y) \propto p(\beta,\Sigma)L(Y|\beta,\Sigma)$$

4. Once the Aposterior distribution $p(\beta,\Sigma|Y)$ is found, β and Σ can be found by calculating $p(\beta|Y)$ ва $p(\Sigma|Y)$ respectively (where $p(\beta|Y)$ and $p(\Sigma|Y)$) distributions are called data-based **marginal distributions**). Finally, the corresponding mathematical expectation and variance of $p(\beta|Y)$ and $p(\Sigma|Y)$ can be easily analyzed to form a point estimate and accuracy measurements of the parameters sought.

But in practice it can often be very difficult or even impossible to analytically derive marginal distributions from $p(\beta, \Sigma|Y)$.

This problem can be solved by subtracting the number based on the Monte Carlo simulation methods.[10]

Model implementation and forecasts for Uzbekistan

To construct a vector autoregressive model on a quarterly basis, 4 macroeconomic indicators were used as endogenous variables. These are inflation, real GDP growth, the average interbank deposit interest rate and the change in the exchange rate of the soum against the US dollar.

The data covers the period from the 1st quarter of 2010 to the 1st quarter of 2021. The sources are data from State Statistics Committee and the Central Bank of Uzbekistan.

Evaluate the parameters of the VAR model

In this research all the calculations were made using MATLAB® software. When constructing the model, 4 lags were taken as the VAR order. Prior to the model evaluation, inflation data were seasonally adjusted using the standard X13-ARIMA-SEATS method.

The model parameters were evaluated using the Gibbs sample generator, using the Minnesota a priori as the a priori distribution of the model coefficients. The number of iterations of the Gibbs sample generator was 25,000, and the results of the last 2,500 iterations were used to formulate the distribution of model parameters and make predictions.

Inflation forecast trajectory by BVAR model

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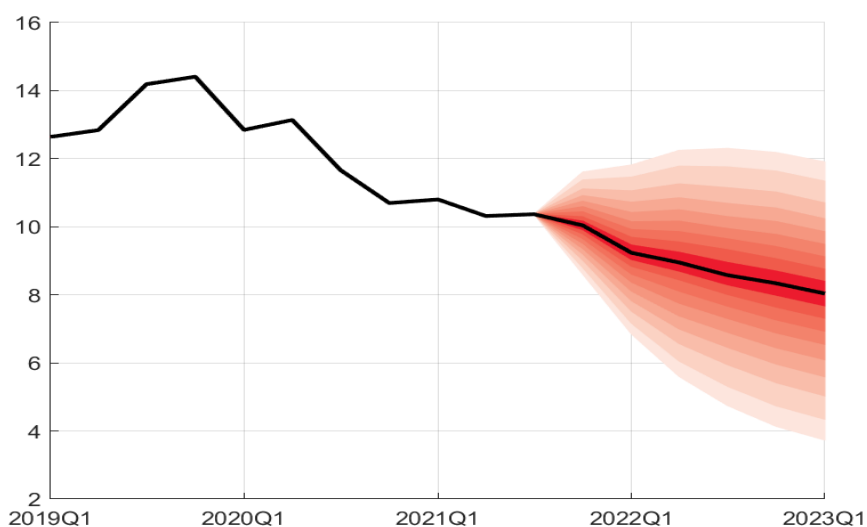
[10] For more information: "Short-term inflation forecasts: Detailed statement of the estimation of a vector autoregressive model using a Bayesian method (BVAR)". Central bank of the Republic of Uzbekistan. July, 2021.

Results

The following **forecast trajectory** for the inflation was formed through assessing the Bayesian VAR model. Herewith, the inflation is projected to amount **8,3-9,2%** by the end of 2022.

Prospects for model improvement

In the next stages of the study, the use of the Minnesota a priori as well as the more complex and perfect Normal inverse Wishart Prior a priori is considered becasue rather than assuming the covariance matrix to be stationary and diagonal, it allows the coefficients and the aposterior distiribution of the covariance matrix can be derived analytically.

This is followed by an increase in the number of endogenous variables, the formation of impulse response functions, and the implementation of dispersion decomposition.

Digital Currency of the Central Bank: analysis of foreign experience and implementation potential

Money is classified according to four main characteristics: issuer (Central Bank or other), form (electronic or physical), availability (universal or limited) and transfer mechanism (centralized or decentralized).

Based on the above characteristics, the **digital currencies of central banks** (hereinafter *CBDC (Central bank digital currency)* are defined as electronic currency of the Central Bank in decentralized form, that is electronically between the payer and the recipient without the involvement of a financial intermediary. This feature distinguishes the CBDC from other available money forms.

Another distinctive feature of the CBDC is its popularity, which is currently unique to only one form of currency issued by the Central Bank - cash.

The electronic form of money combines the features and advantages of cash and non-cash money. However, there are **some differences**:

• Unlike cash, e-money has a high degree of fragmentation and portability, very low cost of issuance, delivery and storage, low deterioration and high security features;

• Unlike non-cash transactions, where personal information is mandatory, it is enough to know the details in recipient's accounts of electronic money, which ensures the anonymity of transactions.

It is necessary to distinguish between public and private electronic money. **Public electronic money** is an integral part of the public payment system, the issuance and circulation of which is carried out on the basis of national legislation. **Private electronic money** is the currency of non-governmental payment systems that regulate the issuance and circulation on its own rules. Often they depend on the national or foreign currency, or the price of gold, but states **do not guarantee the reliability and liquidity of private electronic money.**

Today, **cryptocurrency**, a type of private e-money, is especially popular.

One of the opportunities for central banks in issuance digital currencies is the use of blockchain technology (or Distributed Ledger Technology).

Unlike cryptocurrencies, CBDCs are centrally issued and guaranteed by Central Banks, which provides less volatility and higher security.

Following two possible forms of CBDC are the most common:

Retail digital currency is a new form of Central Bank currency widely used by individuals and legal entities, which serves as a substitute (or replenishment) for cash and an alternative to bank deposits. However, the

calculation of interest income is not provided. This form of central bank digital currency provides anonymity like cash, but in digital form.

Wholesale form of digital currencies is a payment system managed by the central banks, which is used only by a narrow range of users (financial institutions and professional market participants who keep money in the accounts of the Central Bank).

Analogues of wholesale digital currencies are correspondent accounts and banks' deposits at central banks. Data on transactions under this system is visible for the Central Bank and does not provide anonymity, but it helps to increase the efficiency of calculations and reduce costs.

According to a survey conducted by the Bank for International Settlements (BIS)[11] in 2020 involving central banks of 66 countries representing 75 percent of the world's population and 90 percent of world economy, more than 80 percent of regulators are working on digital currencies, and 40 percent of theoretical research have moved to practical experiments.

In particular, 36 central banks, luding the Bank of Russia[12], have published analytical papers on digital currencies. Three countries have tested digital currency (Uruguay, Ukraine, Ecuador), and six more (Bahamas, Cambodia, China, the Eastern Caribbean, South Korea, Sweden) are implementing pilot projects.

The digital ruble is issued by the Bank of Russia in digital form in addition to existing currency forms. Population and businesses can freely transfer their money from one form to another, i.e. from the digital ruble to cash or to a bank account, or vice versa, depending on their needs.

The digital ruble will be in the form of a unique digital code deposited in a special electronic wallet. Transfer of a digital ruble from one user to another is carried out in the form of transfer of a digital code from one e-wallet to another.

The Bank of Russia has developed **4 models** of digital currency **issuance**:

Model A - The Central Bank opens electronic wallets for interbank settlements.

Model B - The Central Bank opens and stores customers' wallets on the CBDC platform, as well as performs settlements on them itself.

Model C - The Central Bank opens and stores customers 'wallets on the CBDC platform. However, banks or financial institutions act as intermediaries, opening customers' e-wallets and performing settlements on them.

Model D - The Central Bank opens and keeps e-wallets in the CBDC for banks and financial intermediaries. Banks and financial intermediaries open, store and settle e-wallets for customers on the CBDC platform.

Clients are guaranteed confidentiality when making payments on the CBDC

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[11] **BIS Papers** № 107/ «Impending arrival – a sequel to the survey on central bank digital currency». C. Boar, H. Holden, A. Wadsworth. January 2020.
[12] Bank of Russia – «Цифровой рубль» («Digital ruble»). Report for public consultations. October, 2020.

platform, which means that banks and financial intermediaries (models C and D) have access to only identification information on customers 'e-wallets, but do not provide access to information about the purpose and content of payments. That is, the CBDC infrastructure guarantees the confidentiality of data for users, but not the anonymity of transactions. Identification is required to make payments through the CBDC and the data is recorded on the Central Bank platform.

In China, work on the CBDC project began in 2014, and in 2020 the government began mass testing of a currency called DC / EP (Digital Currency / Electronic Payment).

China plans to make full use of DC / EP at the 2022 Winter Olympics in Beijing.

Among the all the current CBDC projects, the **DC / EP project** of the People's Bank of China is currently the most advanced.

In addition to creating convenience for **DC / EP** online transactions, in the context of the duopoly of mobile payment transactions Alipay and WeChat Pay, which represent **94 percent** of the mobile payment market, a competitive environment will be also created. After the current trial phase, DC / EP will be an additional payment instrument in cash, but a full cash replacement is not envisaged.

DC / EP is a direct obligation of the People's Bank of China denominated in yuan, but payment services are provided by intermediaries (authorized operators) in real time. The central bank periodically obtains copies of transactions from intermediaries. This approach allows to avoid the concentration of risks only on the Central Bank and the interference of existing financial institutions in payment operations.

The fact that intermediary agencies first store transaction information and then provide it to the Central Bank on a regular basis ensures that users are anonymous to each other, as well as allowing the Central Bank to monitor information needed for prudential regulation and money laundering and other criminal offenses.

The total number of opinions of central bankers on CBDC
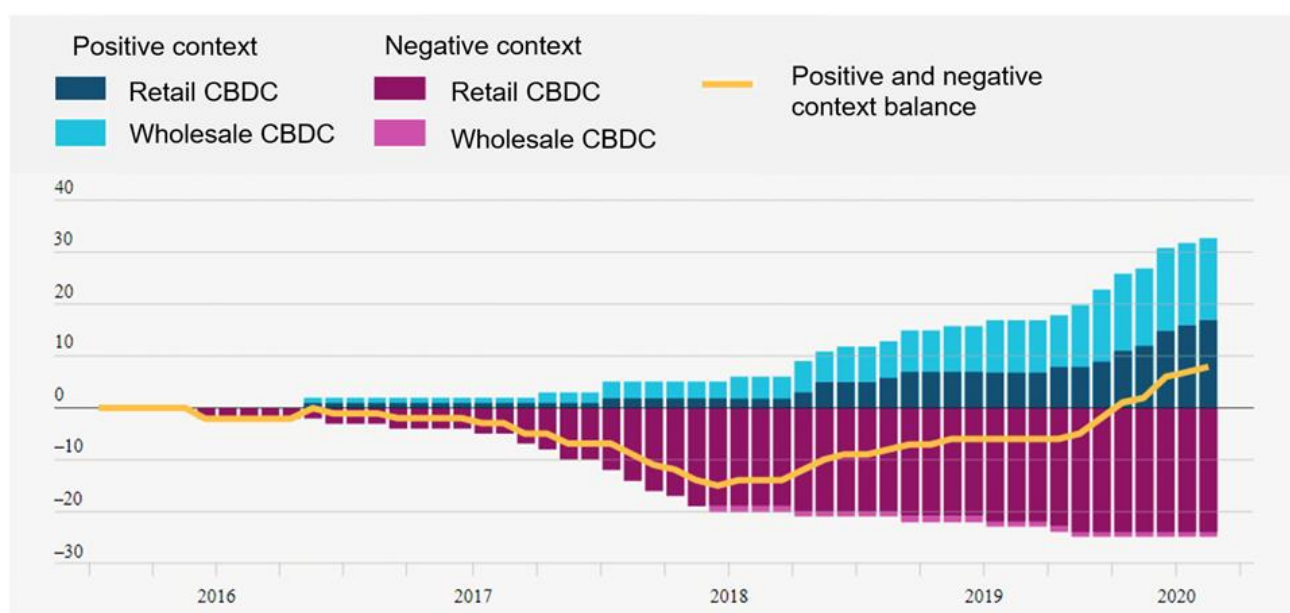
Манба: Bank for International Settlements.

In addition, according to the chart above more and more Central Bank executives and board members have a positive attitude towards the CBDCs. In 2017 and 2018, many of them were in a negative and questionable position on CBDCs, especially in the retail form. Since the end of 2018, the number of positive reviews on retail and wholesale CBDCs has increased, and after mid-2020, there have been more positive views than negative ones *(Figure 1).*

The coronavirus pandemic has dramatically increased the importance of online and contactless payments, boosted consumers' demand for quick, cheap and reliable money transfers, and further accelerated the development of digital currencies as a way to reduce the operational risks of payment systems.

I. Factors in the implementation of digital currencies

Active discussion of digital currencies between central banks depends on a number of factors:

1. Increasing demand for digitalization of money relations. Digital currencies of central banks, unlike digital currencies of private companies, are guaranteed by the regulator, which increases the reliability of the system. Allowing the entry of other digital currencies belonging to the private sector (e.g. Facebook LIBRA), accelerating the transformation of money circulation and increasing the popularity of financial services pose a potential threat to financial stability due to the absence of centralized control over emerging financial flows.

2. Digital currency is designed to increase competition in the financial market in the context of competition between banks and technology companies. Retail digital currencies can become a major competitor for commercial banks due to their financial inclusion, i.e. their popularity, transparency and affordability. Because in this method of payments, economic agents are given the opportunity to conduct financial transactions freely (without any intermediaries) at minimal cost.

3. Due to the programming and **transparency** of the digital currency, it will be easier for regulators to control the monetary sector. Transparent data on payment flows improves the quality of macroeconomic statistics.

4. Increases the **confidentiality** of payments in terms of protection of personal data from third parties, ensures high speed of cross-border transfers, low fees for remittances or no fee commission.

5. Due to the transparency of digital currency payments and, consequently, the ability to track the targeted use of digital funds, it can become a unique tool in the fight against corruption.

II. Risks and problems of potential emission

Making an appropriate decision by the central banks on the digitization of the national currency poses a very complex task for them, from the development of the mechanism to the implementation of the full digital form of the national currency. In this case, the following risks may arise:

1. Risks to financial stability. An increase in demand for the central bank's digital currencies will lead to an expansion of the regulator's balance sheet, which may require the central bank to hold additional assets of commercial banks, such as loans, government securities or international reserves. In turn, there will be an outflow of liquidity from the banking system, which could pose a risk to the financial stability of commercial banks.

2. The risk of structural disruptions in banks and the **centralization** of the loan distribution process in the Central Bank;

3. Risk of systemic attacks on banks in crisis situations.

4. The risk that society will not accept the new form of money.

5. **Cybersecurity** is currently one of the most important operational tasks for the central banking system and the financial sector in general. It poses a particular challenge in implementing the CBDC, which is open for many cyberattacks. Therefore, reliable methods of protection against cyber threats will be a necessary condition for the Central Bank to develop an appropriate mechanism.

In general, **the launch of research on the creation of CBDC in our country**, the involvement of experts and technical assistance programs of the IMF and other international financial institutions, the study of foreign practice are the main tasks to be fulfilled in the medium term.

The development of cashless payments through the central bank's digital currency and its impact on the implementation of monetary policy, exchange rate policy, the formation of price levels in the economy and overall macroeconomic stability should be thoroughly assessed, and **existing risks and uncertainties** should be adequately analyzed.

Liquidity forecast and opportunities to implement econometric models

From 2019, the practice of **analyzing and forecasting the liquidity** of the banking system in terms of factors has been established and is being improved in accordance with the recommendations of experts from international financial institutions and foreign central banks.

Factors affecting the liquidity of the banking system are:

1. Government operations. The operations of the state budget, budget organizations and extra-budgetary funds are **key factors** affecting overall liquidity. Execution of budget expenditures has an **increasing** impact on liquidity, while the collection of revenues (taxes, customs duties, etc.) has a **reducing** effect.

Government operations are studied on **three major** components and include operations of the state budget, Uzbekistan Fund for Reconstruction and Development, and the Fund of Agricultural Support.

Seasonal factors (monthly and pension payments in the first half of the month and tax collection in the second half of the month, transferring funds to agricultural enterprises), **decisions** on funds allocation (allocation of funds on family business programs) and tools of **constant information exchange** are used in forecasting.

2. Purchase of precious metals by the Central Bank. Precious metals (mainly gold and silver) produced in the country are purchased only by the Central Bank, and payments in this area are a key factor in **increasing overall liquidity.**

Payments are made based on the **average market price** of metals formed during the month, and it is relatively easy to predict the impact of this factor due to the availability of a payment schedule. In this case, the **expected market price** of metals is an uncertain indicator, and due to its change, there may be a discrepancy between the predicted and the actual quantities.

3. Central bank interventions. In carrying out interventions in the domestic foreign exchange market, the Central Bank has been based on the principle of **"neutrality of international reserves"** since 2018, with annual net interventions within the amount of precious metals purchased. The Central Bank fully sterilizes the additional liquidity generated in the economy

as a result of the purchase of precious metals through its interventions in the domestic foreign exchange market.

The forecast of this factor is based on the principle of neutrality, taking into account the **seasonality of demand** in the domestic foreign exchange market (mainly in the II-III quarters of the year), the formation of supply factors, foreign exchange transactions by the Ministry of Finance.

4. Cash operations. Receipt or transfer of cash by commercial banks from the Central Bank is one of the main factors affecting overall liquidity and is highly seasonal.

Today, in collaboration with experts from the EBRD and the Czech consulting company OG Research, the **econometric model ARIMA** is being implemented to forecast the impact of that factor, which provides a comprehensive assessment of seasonality and trends.

5. Government securities. Operations related to government bonds issued by the Ministry of Finance, their repayment and coupon payments have an impact on overall liquidity.

At the same time, **the pre-announcement of the quarterly schedule** of government securities which are planned to be issued by the Ministry of Finance, provides additional convenience in liquidity management for banks and in forecasting the impact of this factor for the Central Bank.

6. Accounting operations on required reserves. The fact that the operations on the Central Bank's reserve requirements at the end of the reporting period (formation or return of additional reserves) affect liquidity, and the **approval of the schedule** for the reporting period at the beginning of the year increases the ability to predict the impact of this factor.

The impact of this factor depends on the decisions made by the Central Bank and changes in banks' deposit base subject to reserve requirement, which are relatively easier to predict and impact of which is relatively low.

7. Monetary operations of the Central Bank. The volume of short-term monetary operations carried out for liquidity management in the banking system is determined based on the forecast of the above factors and is adjusted by the Central Bank for effective liquidity management.

At the same time, in the context of increasing liquidity, the Central Bank raises the volume of **liquidity absorbing instruments** (Central Bank bonds, deposit auctions and overnight deposit operations), and when there is liquidity shortage, the demand for **instruments of liquidity provision** (REPO and SWAP auctions, REPO and SWAP overnight operations) increases.

In general, forecasting the liquidity of the banking system is a daily practice, and forecasts on the **"Liquidity Forecast Matrix",** introduced in 2020, are updated daily. These forecasts are necessary for the timely detection and effective management of existing surplus or deficit in liquidity, and serve to prevent sharp fluctuations of money market interest rates from the key rate.

Today, the use of modern econometric models in forecasting the factors affecting liquidity has been expanded, the process of implementation of ARIMA model to forecast **cash operations** is nearing completion, and measures are being taken to model the **impact of government operations**.

In international practice, when modeling seasonality on a daily basis, central banks mainly use 2 different models: **ARIMA** and **Structural Time Series**. In the structural time series model, the indicators are divided into trend, **seasonal,** and **unusual components** and forecasted using the Kalman filter. The **ARIMA model** includes dummy variables that reflect the different seasonal and calendar effects of the variable.

The autoregressive part of the model (AR) assumes that the dependent variable (for our model - change in balance of cash in circulation) is a function of its previous values, while the **moving average part** (MA) allows the addition of constant random shocks.

Changes in balances of cash in circulation are seasonal, and **seasonality** in them is explained by the following conditional variables:

1) **weekly:** there is an increase in cash in circulation before the end of the week (Fridays), which is explained by the placement of sufficient cash for withdrawals from ATMs on weekends;

2) **monthly:** due to the payment of wages and pensions in the first half of the month there is an increase in the amount of cash in circulation, and due to the payment of taxes and other mandatory payments there is a decrease in the second half of the month;

3) **annual:** there is an increase in cash in circulation mainly in the II-III quarters and a decrease in the remaining quarters, which is explained by a significant increase in purchasing activity of the population during this period;

4) **calendar effect:** holidays have a significant effect, and in the days before the holiday there is a significant increase in cash in circulation.

The model looks like this:

$$DL\_CIC = \beta_0 + \beta_1 * AR(1) + \beta_2 * AR(2) + \beta_3 * AR(21) + \beta_4 * MA(1) + \beta_n * DV(1:n) + \varepsilon$$

where, **DL_CIC** is the logarithmic difference of the change in the volume of cash in circulation; **AR** is autoregressive variables; **MA** is the moving average; DV are conditional variables (detailed in the table below) and **ε** is error.

The autoregressive variables in the model are **AR (1)** - previous day value, **AR (2)** - 2 days prior value, and **AR (21)** - 21 days prior value. The value of 21 days prior is mainly explained by the recurrence of seasonality.

There is also a significant increase in the amount of cash in circulation on **Fridays or the last working day of week, the working days before the holiday,** due to the fact that the population cashes funds from plastic cards for expenses.

Table 1. Results of ARIMA model for forecasting changes in cash in circulation
(basic independent and dependent variables)

№	Variables	Coefficient	Standard deviation	T-statistics	Possibility
1.	AR (1) – previous day value	0,462	0,080	5,805	0,000
2.	AR (2) – 2 days prior value	0,220	0,037	5,894	0,000
3.	AR (21) – 21 days prior value	0,095	0,025	3,735	0,000
4.	MA (1) – 1st-order mooving average	-0,336	0,077	-4,362	0,000
5.	FRI – Friday (the last working day)	0,186	0,040	4,652	0,000
6.	LTM – the last Tuesday of a month	-0,093	0,049	-1,923	0,055
7.	JAN – January	-0,172	0,067	-2,562	0,011
8.	FEB – February	-0,133	0,071	-1,866	0,062
9.	JUNE – June	0,124	0,047	2,661	0,008
10.	NOV – November	-0,166	0,076	-2,185	0,029
11.	LDOBLW – the last working day before a holiday	0,345	0,070	4,931	0,000
12.	FITR_1 – Arafa day	0,304	0,131	2,322	0,020
13.	FITR_2 – the day before Arafa day	0,447	0,091	4,931	0,000
14.	DMH_1 – the working day before the Day of Remembrance and Honor	0,685	0,093	7,328	0,000
15.	WO_1 – the working day before the Women's Day	0,636	0,076	8,322	0,000

Source: Central Bank

As the volume of cash in circulation is constantly increasing, the number of **factors of growth** in the composition of independent variables is in the majority. **The last tuesday of a month** is included as a mitigating factor, meaning that cash deposited in commercial banks over the weekend to make taxes and other mandatory payments will be recounted on Monday and returned to the Central Bank on Tuesday.

Conditional variables for January, February and November are also reducing factors, explained by the seasonal decrease in the volume of cash in circulation in the I and IV quarters of the year.

This model will be published on the official website of the Central Bank in the form of a separate material after finalization, modification of a series of conditional variables and optimization of the results.

In turn, preparation and publication of a quarterly "Liquidity Review of the Banking System" on analysis the overall liquidity of the banking system, the impact of factors and its projected dynamics has been implemented, and this report is the main tool in informing the market participants about the overall liquidity situation and liquidity management by the Central Bank.

Appendix 6

Impact of investment expenditures from the state budget on private investment in the economy

Despite the fact that in recent decades **most economists have advocated the practice of coordinated fiscal policy with a countercyclical approach**, it can still be observed that the fiscal balance is being formed at a negative level in many countries today.

It should be noted that the increase in government spending will lead to the effect of **"crowding out"** in the economy, i.e. the reduction of investment spending in the private sector. In this case, the government can finance the fiscal deficit from three types of sources: **currency issue, increasing tax revenues** and **borrowings**.

At the same time, financing through currency issue can lead to an **increase in inflation** in the economy, the introduction of new taxes or an increase in rates on existing taxes can lead to a **decrease in net income of the population and businesses** and, consequently, a decrease in aggregate demand in the economy.

Given the above, governments prefer **borrowings** as an optimal way. At the same time, the attraction of domestic debt from the private sector through the issuance of short-term and long-term government bonds may limit the investment opportunities of the private sector.

Economists of the Keynesian school argue that the increase in government spending will serve to improve **human capital and infrastructure** in the economy. In particular, the expansion of roads and railways, and the improvement of the logistics sector in general, will reduce transportation costs for the private sector. This, in turn, means the creation of additional investments at the expense of savings.

Although there has been much research on the impact of public spending on changes in private sector investment, the findings are **contradictory** and based on the two types of economic theories mentioned above.

In particular, the results of Naqvi's (2002) empirical analysis using the VAR model show that the increase in government investment spending in the Pakistani economy has led to **a positive formation of investment in the private sector**. At the same time, the empirical study of economists Akkina and Chelebi (2002) confirms the hypothesis that the increase in public

spending in Turkey **has a "crowding out" effect on private sector investment**.

Also, according to Atukeren research (2005) conducted for **25** emerging economies in the period 1970-2000, it was found that **11** countries had a "crowding out" effect, and **14** countries did not. In addition, Erden and Holcomb (2005) found that the "crowding out" effect is more common in **developed economies,** while in developing countries, increased government investment spending serves as an **accelerator** of private sector investment.

**Figure 1. Share of components of GDP expenditure approach**
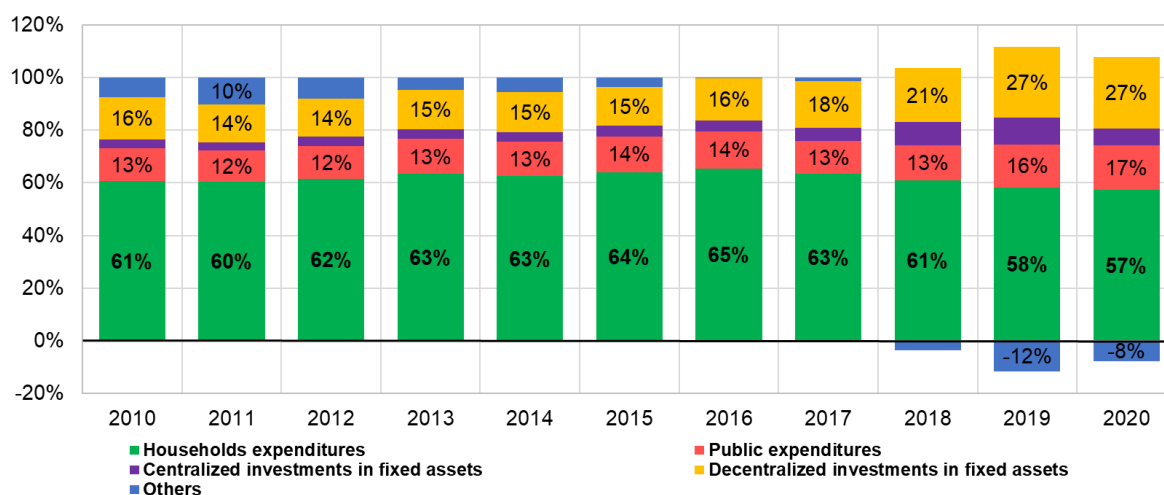
Source: Data from the State Statistics Committee.

In the context of Uzbekistan, as a result of structural reforms in the economy in recent years, there has been a significant increase in the **share of government expenditure in GDP**. In particular, the share of government final expenditure in GDP increased from 14% in 2016 to **17%** in 2020, the share of public investments in fixed assets increased from 4% in 2016 to **10%** in 2019 and amounted to **7%** in 2020 in the context of pandemic.

As a result, accordingly, the share of final household expenditures in GDP decreased from 65% in 2016 to **57%** in 2020 *(Figure 1).*

It should be noted that in recent years there has been a **high growth rate in lending to the economy**. Particularly, during the last 4 years, the balance of credit investments in the economy has grown rapidly, and as of July 1, 2021, the balance of credit investments amounted to 305 trillion soums which is **5.6 times** more than on January 1, 2017 (250 trillion soums)[13] *(Figure 2).*

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[13] It also has an impact of the revaluation of foreign currency loans due to exchange rate liberalization in September 2017 and returning of some foreign currency loans to the balance of the UFRD in the IV quarter of 2019.

Figure 2. Main components of growth of loans to the economy *(trillion soums)*
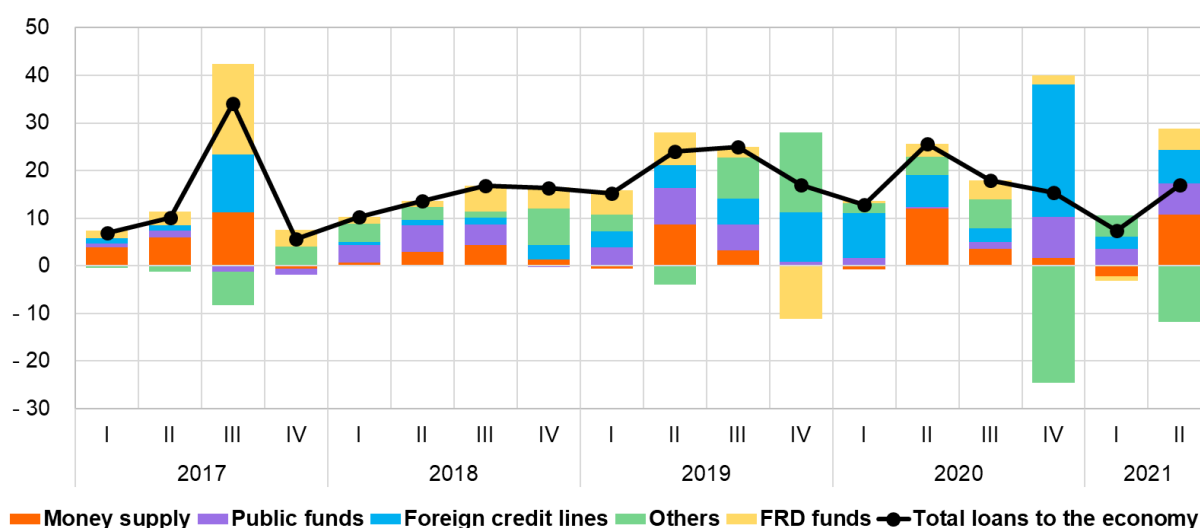
Source: Central Bank Accounts

However, the main source of financing credit investments in the economy during this period is **government funds, the resources of Uzbekistan Fund for Reconstruction and Development and external borrowing**, which is widely attracted by banks. It is not recommended to use these sources of credit investments in the economy on a regular basis, since there are a number of **negative consequences** of this. In particular, the allocation of preferential loans to various sectors at the expense of the government and the UFRD will increase the pressure on centralized funds and lead to changes in **fiscal conditions**, while the steady growth of external debt will increase sensitivity of banks' to **external risks** and **dollarization in the economy**.

This analysis provides an empirical assessment of the impact of changes in government spending on the volume of investment in the private sector and the effect of interest rates on preferential loans in the national currency on the formation of interest rates on loans issued on market principles.

Empirical assessment of the impact of changes in government expenditure on private sector investment used World Bank data for CIS countries for 1996-2020 due to the **inability of previous fiscal data to explain the current situation in our country** as a result of ongoing reforms in the economy.

For the analysis, the following function was used:

$$pri\_inv_t = \beta_0 + \beta_1 gov\_cons_t + \beta_2 GDP\_growth_t + \beta_3 trade\_open_t + \beta_4 corrupt_t + \varepsilon_t$$

where,

- *pri_inv* – *the ratio of private sector investment to GDP;*
- *gov_cons* – *the ratio of total government expenditure to GDP;*
- *corrupt* – *an indicator of the prevention of corruption;*
- *trade_open* – *the ratio of total foreign trade to GDP;*
- *GDP_growth* – *the annual GDP growth compared to the previous year.*

The results of the empirical analysis show that changes in government expenditure has a negative and **statistically significant at the level of 5% effect** on the formation of private sector investment.

In particular, the increase in the ratio of **government expenditure** to GDP by 1 percentage point lead to a decrease in the ratio of investment in the private sector to GDP by **0.3 percentage points**, excluding changes in other factors. This, in turn, means that the *crowding-out* hypothesis based on the classical theory can be confirmed in the Uzbek economy as well.

In addition, impact of GDP growth, openness to foreign trade and anti-corruption indicators taken as independent variables determining changes in the volume of investments in the private sector was statistically significant at **5 percent** level.

A 1 percentage point acceleration in GDP growth will increase the ratio of private sector investment to GDP by **0.12 percentage points**, **the level of openness to foreign trade** by **0.07 percentage points**, and the **improvement of anti-corruption indicator** by **1 p.p.** will lead to a positive change in the ratio of investment to GDP by about **0.14** percentage points.

Also, the impact of preferential loans on the formation of interest rates on this type of commercial loans for our country was assessed empirically on the basis of monthly data for 2017-2021 using the following function:

$$interest_t = \beta_0 + \beta_1 ln\_loan_t + \beta_2 inf_t + \varepsilon_t$$

where,

- *interest* – *the average weighted interest rate on loans issued on commercial terms in the national currency;*
- *ln_loan* – *the volume of preferential loans in national currency;*
- *inf* – *inflation rate compared to the corresponding quarter of the previous year;*

The results of this analysis show that the application of preferential lending practices, i.e. an increase in the volume of preferential loans in the economy, will lead to an **increase in interest rates in the credit market.**

At the same time, a **10%** increase in the volume of preferential loans in the national currency will increase the interest rate on loans issued on commercial terms in the national currency by **0,7 percentage points**. It was

also found that the increase in the inflation rate by 1 percentage point will lead to an increase in the interest rate on loans in the national currency by **0.12** percentage points.

In addition, in order to study the impact of the increase in the share of government final expenditures in GDP on economic growth in the long run, the macroeconomic indicators from the World Bank database for **51 countries** (including 19 high-income countries, 15 upper-middle-income countries and 17 lower-middle-income countries) were studied.

When studying the impact of changes in the share of public expenditures in GDP on real economic growth it was found that a **1 percentage point** increase in the share of government final expenditures in GDP in these countries will increase real GDP growth by **0.24 percentage points** in the long run.

The ratio of government final expenditures to GDP (in average for last 10 years) amounts **10%** in Kazakhstan, **12%** in Tajikistan, **13%** in Armenia, **14%** in Turkey and Georgia, **15%** in the USA and **16%** in China. According to the World Bank, over the past 10 years, the ratio of final government spending to GDP in our country has been **14.4%** on average, and it amounted to **17%** in 2020.

It can be concluded that the increase in the share of public final expenditures in GDP has a positive effect on temporary economic growth in the context of structural economic reforms, but in the long run **has a negative impact on economic growth** through the "scrowding out" effect on the private sector.

The "crowding out" effect can also occur through **spending on key production and infrastructure facilities**, which are important for the further development of the economy, and in order to ensure sustainable growth of the private sector it is important to involve private companies in projects in these areas, including growing **practice of the public-private partnership**. Expanding the scope of partnership projects is an important step.

Addionally, the reduction of the **state's provision of centralized resources to banks** and the **practice of preferential lending** are important factors in creating equal conditions for all economic entities, privatization of the banking system and encouraging banks to attract deposits from the domestic market. In this regard, in order to achieve long-term sustainable inclusive economic growth, it would be expedient to reduce public spending and the **share of the state** in the economy, **accelerate the privatization process** and **expand public-private partnership**.

Glossary

Administratively regulated prices	– prices that are developed not under the impact of the market drivers (supply and demand), but are fixed by the public administration authorities, organizations and enterprises by administrative way for certain goods (services) with the aim of restricting changes of their prices.
Anchoring of inflation expectations	– linking the forecasted inflation rates of the population and business entities for the next medium term to a certain quantitative indicator (inflation target).
Average weighted interest rate	– an average rate calculated with the account of the weight of the studied indicator in the aggregate volume. The share of each rate stake in the aggregate volume is taken as scales.
Balance of payments	– statistical report which reflects all economic transactions between residents and non-residents for a certain period of time.
Consumer demand	– a part of the aggregate demand in the economy related to consumer goods and services.
Consumer Price Index (CPI)	– an indicator of the change in the general level of prices for goods and services purchased by the population for consumption. The CPI is calculated as the ratio to the cost of fixed set of goods and services in the prices of the current period to its value in the prices of the previous (basic) period.
Core inflation	– inflation calculated without including changes of prices for certain goods and services, subject to the impact of factors which have a seasonal and administrative character (fruit and vegetable products, fuel, certain public transport services, communication services, housing and public utilities, etc.)..
Cross-border money transfer	– transfer of funds to or from the country through international money transfer systems.
Currency crisis	– sharp fluctuations in exchange rates in the foreign exchange market, the depletion of the country's foreign exchange reserves and the sharp imbalances in the balance of payments, as well as an increase of imbalances in foreign exchange and loan markets.
Currency interventions of the Central Bank	– participation of the Central Bank in the foreign exchange market by selling and buying foreign exchange with the aim of sterilization additional liquidity in the banking system formed as a result of the purchase of the monetary gold by the Central Bank with the aim of smoothening or prevention of sharp fluctuations of the exchange rate.
Current account	– a section of the balance of payments of the country which reflects the flow of goods, services, primary and secondary income (wages of employees, return on investments and others) between residents and non-residents.
Deposit auctions	– operations of the Central Bank to attract funds on the representative account of commercial banks at auction interest rates (usually for one or two weeks) in order to manage the overall liquidity of the banking system and temporarily withdraw excess liquidity from the banking

system in the context of structural liquidity surplus.

Economic cycle	– a natural form of economic development, in which the rise in production, employment, GDP growth is replaced by periods of recession.
Financial market	– system of economic relations arising in the process of the exchange of economic benefits.
Financial stability	– the state in which the financial system effectively performs its functions, ensuring the redistribution of resources and financial risk management, there is no excessive volatility in the financial market (its segments), the smooth execution of settlements is ensured, as well as the ability of financial system to function in extreme conditions, preventing the impact of negative shocks, and to recover under stress.
Financial system	– a set of financial organizations and financial markets that provide with the help of various financial instruments the formation and use of funds from the state, organizations, and the population. At the same time, financial institutions (markets and financial organizations) carry out the redistribution of limited financial resources from one economic entity to another.
Gross domestic product deflator	– a change in the overall level of prices for goods and services produced and consumed in a country over a period of time.
Inflation inertia	– the tendency of inflation to return slowly to its long-term (equilibrium) level after the shock, which deviated it from this long-term level.
Inflation target	– a pre-announced target of inflation that lays the groundwork for long-term economic growth and price stability.
Inflation targeting regime	– the monetary policy regime, in which the Central Bank declares medium-term target for the inflation rate and focuses all its efforts on bringing current inflation to its target by applying monetary instruments.
Inflationary expectations	– assumptions of the population and entrepreneurs about the future inflation rate, which they take into consideration when making economic decisions. Proceeding form the inflationary expectations, producers and consumers, sellers and buyers elaborate their future monetary, financial and pricing policies, assess level of income, expenditure and expected volume of profit.
Interbank money market	– a system of organization and implementation of exchange trades of short-term transactions (as a rule, up to one year) for the placement and attraction of cash funds in the national and foreign currencies.
Interest rate corridor	- a system of approximation of short-term interest rates in the money market to the key policy rate (interest rate target) of the Central Bank; the upper limit of the interest rate corridor is the Central Bank's lending rate to commercial banks (usually the overnight rate), and the lower limit is the Central Bank's rate for attracting deposits from commercial banks.
Interest rate policy of the Central bank	– part of the monetary policy of the Central Bank, with the help of which the Central Bank influences the cost of financial resources and the level of interest rates in the economy, as well as the financial and

investment decisions of the population and business. The interest rate policy is aimed at maintaining a certain level of interest rates in the economy in order to ensure positive real rates on assets of the national currency. A change in the central bank's interest rate affects the level of interest rates in the economy as a whole, which corresponds to investment/savings and therefore to aggregate demand.

Investment demand – demand from business entities for physical capital objects (cars, equipment) and services used to maintain or expand its activities. Investment demand is a part of the aggregate demand in the economy.

Key interest rate – the interest rate, which determines the interest rate for borrowing for commercial banks and the cost of borrowing for borrowers; the change in the key interest rate affects the interest rates in the interbank money market.

Liquidity of the banking system – cash balances in the national currency on correspondent accounts of commercial banks in the Central Bank of the Republic of Uzbekistan.

Liquidity sterilization – withdrawal of excessive liquidity from the banking system occurred due to the various factors.

Long-term money – expression used in the economy to characterize finance for long-term (more than a year) borrowings (investments) or loans provided for a long time.

Macroprudential policy - a set of active measures aimed at minimizing systemic risk in the financial sector or its individual sectors.

Monetary factors of inflation – inflation factors which can be directly impacted by the Central Bank with the help of monetary policy instruments in the medium-term perspective.

Monetary policy – a part of the monetary policy, conducted by the Central Bank of the Republic of Uzbekistan with the aim of ensuring price stability in the domestic market. Monetary policy is implemented through the use of monetary instruments to maintain liquidity in the banking system, interest rates and other monetary indicators at the target level.

Money supply – an aggregate amount of cash in circulation and money in the bank accounts. To analyze money supply various money aggregates classified by the liquidity degree are calculated:
M0 – cash in circulation;
M1 – M0 + demand deposits in the national currency;
M2 – M1 + term deposits, saving deposits and other deposits + deposits in foreign exchange.

Non-monetary inflation factors – factors affecting inflation, which are beyond the influence of monetary policy of the Central Bank. This group includes external economic conditions, structural factors (the state of the basic funds, productivity and production efficiency, supply and qualitative parameters of the labor force, technological level of production, transport, logistics infrastructure, concentration of markets), legal regulatory environment, fiscal policy, factors on the part of supply of

goods and services.

Output gap	– the difference between actual GDP and potential GDP. A positive GDP gap is called the inflationary gap, which indicates that the growth in aggregate demand outstrips the growth in aggregate supply, which possibly leading to inflation. A negative GDP gap is called a recessionary gap, which possibly leads to deflation.
Refinancing rate	– the interest rate of the Central Bank which is used in the transactions of the Central Bank with commercial banks to extend loans.
REPO operations	- operations of selling government securities to the Central Bank on the basis of a repurchase agreement of commercial banks for short-term borrowing or operations of selling securities to commercial banks for the purpose of managing the Central Bank's money supply and bank reserves (in this case, government securities act as collateral).
Reserve requirements of commercial banks	– funds deposited by commercial banks with the Central Bank in order to execute reserve requirements of the Central Bank. The minimum level of reserve requirements deposited with the Central Bank is determined by the regulations of the Central Bank, taking into consideration the objectives of monetary policy and depends on the size, type and term of deposits, other liabilities of banks. The amounts of reserve requirements the equal for all banks by each category of attracted funds.
Systemic risk	– is the risk of collapse of the entire financial system or the entire financial market, as opposed to the risk associated with any participant in the financial market, a group of participants or a separate component of the financial system.
Time lag	– indicator reflecting time backlog of one of economic events in comparison with another one, connected with it; a period of time between two connected events.
Transmission (transferring) channels of the monetary policy	– channels of impact of decisions in the field of monetary policy on the dynamics of prices and the economy as a whole. The process of gradual distribution of the signal of the Central Bank about retention or change of the interest rate and its future trajectory from segments of the financial market to the real sector of the economy and, as a result, to the inflation. The change in the interest rate level is transmitted to the economy through the following main channels: interest rate, credit, currency, asset prices and expectations.
Trend	– the main tendency in the indicator. Trends can be linear equations, described by various logarithmic, power, and so on. The actual type of trend is established based on the selection of its functional model by statistical methods or by smoothing the initial time series.